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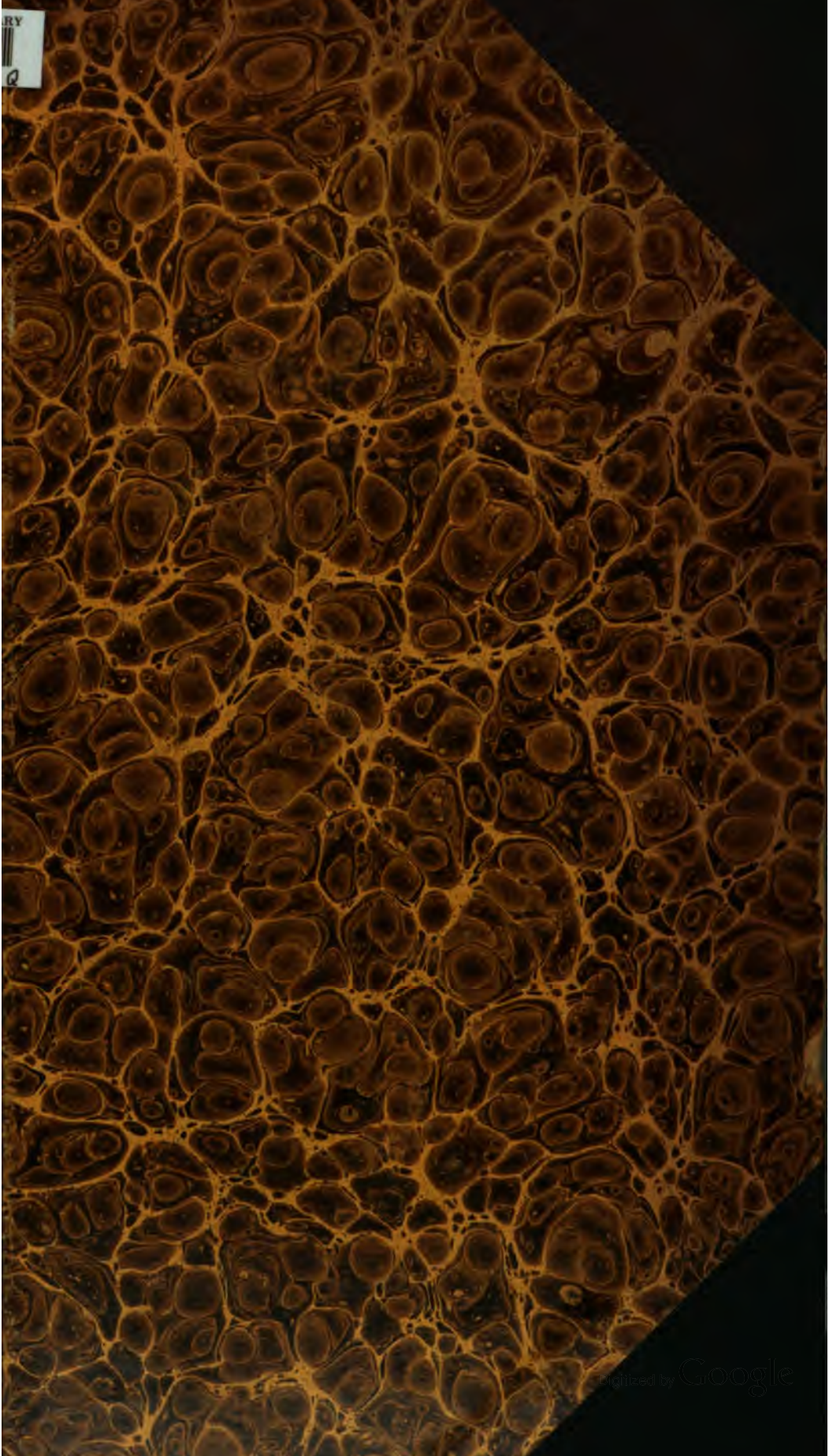
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ORIGINAL CONTRIBUTIONS.

Glandular Fever.

BY J. PARK WEST, M. D.,

BELLAIRE, OHIO.

GLANDULAR fever may be briefly defined as an acute general infection with a local manifestation on the lymphatic system. It was first described as a distinct affection by Pfeiffer in 1889, although similar cases had been published previously by Filatow. A number of papers on the subject followed Pfeiffer's at intervals in foreign countries, but none appeared in the English language until that of the writer in December, 1896. Since then a number of papers have been published in American and English journals, and some of our recent text-books on practice and pediatrics devote more or less space to it.

Whether glandular fever is or is not entitled to be classed as a distinct clinical entity, remains to be proven. That it is proven, is so considered by some; not so, by probably many more. A study of the literature and a close study of the few cases that have come under the writer's care have convinced him that this is a distinct specific general infection as mentioned above, and not merely an enlargement of certain groups of nodes due to some local or accidental infection, nor a form of any other disease. A study of the literature will also show instances of cases reported as glandular fever that are not

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cases of the disease described by Pfeiffer, and such reports only tend to obscure the subject, and to cause doubts in the minds of many as to its true nature and place. It has been the writer's lot to have had shown to him cases from Ludwig's angina down to simple acute adenitis from local infection, that were thought by the attending physicians to be cases of glandular fever. Cases of acute enlargement of groups of lymphatic nodes are occasionally seen that the closest observation will enable one to say are not glandular fever, and for the present such cases should be studied with the closest scrutiny. If glandular fever exists as a clinical entity, its course has been clearly pointed out by a number of observers, and there should be no difficulty, in most instances, in recognizing the condition or in differentiating it from other conditions. As yet we have only the clinical picture upon which to base an opinion, the little bacteriologic work that has been done not showing anything satisfactory. Since the writer's first paper he has seen but eight cases of the disease, and opportunity for close observation was only afforded in three of these. Five cases occurred in three families between whom there was frequent communication; all the children in the families having the trouble. One was an only child. In one family there was another child nine years old; and in the other family, three children.

Symptomatology.—Almost always the disease sets in suddenly with high temperature, muscular soreness, and severe constipation. The child presents the appearance of one very ill, objects to being moved, and holds the head stiffly to one side. Very early enlargement of some lymph nodes will be found, and it is probable this exists from the beginning. This enlargement will always be found in those cases with prodromal symptoms when the child is first seen. Except in the minority, this swelling first appears on the left side of the neck, at the upper fourth of the sternomastoid muscle. Only occasionally will there be at this time enlargement of other nodes. The first mentioned swelling increases for three or four days, or as long as the fever remains high, and during this time other enlarged nodes will appear. These will be most noticeable in the same situation in the right neck, and in a lesser extent in the posterior neck on both sides. Swelling of the nodes in the axilla and groins will appear later in almost all cases, and often in the abdomen, but it is the excep-

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tional case that will have swollen nodes in all these situations; neither will the swelling be so marked in these places as in the neck, particularly on the left side. Symptoms point to an enlargement of the thoracic nodes also. Enlargement of the retropharyngeal nodes was made out by palpation in four of the writer's eight recent cases, and two went on to suppuration. The same chain of nodes goes on to the ear, and one of the two cases had, in addition, suppuration of the middle ear. Manifest enlargement of the liver and spleen is seen in many cases; oftener of but one of these organs. After about the fourth day the swelling in the left neck becomes stationary and in 12 to 24 hours diminishes slightly, while that on the right still increases but rarely reaches the size of that on the left until it also becomes stationary, and then diminishes. The nodes in the other groups seldom enlarge to one-third the size of even those in the right neck, and seldom increase any after 24 hours from the time when they first can be felt. All the swollen nodes are tender, the overlying skin retains its normal color, suppuration rarely occurs, and they disappear in three or four weeks. Anorexia is usually complete, and at times there is vomiting and pain in the stomach. Obstinate constipation, in all but the mildest cases, is a prominent symptom in the early part of the illness. The general symptoms of acute infection are present, and, as a rule, are severe. The termination, except in mild cases, is often by crisis, but not with such a marked fall of temperature and general improvement as in croupous pneumonia; for instance, the crisis being accompanied or preceded by a fetid diarrhea. After this the severity of the general symptoms lessen, there is no farther increase in the size of the swellings, and the child is left weak and pale. The return to health is slow, the anemia persisting for a variable time. The skin may be flushed or dusky, while the temperature is up, but shows no eruption. But in very few cases is there an angina, stomatitis, or coryza, and when present very mild and of short duration.

The report of the two following cases, seen within the past year, will, it is hoped, prove of interest:

CASE I.—Genevieve Morrison, female, 16 months of age. Only child in house. Bottle-fed since birth. Fairly nourished. Ten teeth. Slight rachitic rosary. Head tends to be square. Anterior fontanel large, but at and since birth has been two or three times larger than normal. Slight sweating about

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head at times only. At 4 p.m., on April 25, 1900, while playing on the floor and in her usual health, she began crying as if in severe pain. At 7 o'clock she had another similar cry, and it was then noticed she was feverish. During the night she was feverish, restless, and sore when moved. This continued the next morning, with the addition of drooling and a stiff neck. When seen by the writer at noon, she was extremely nervous, held her head in a constrained position, and any attempt to move her caused her to cry out and grasp tightly the one holding her. There was slight drooling, the buccal mucous membrane was red, the tongue whitish coated, and the throat normal. On the left side of the neck along and under the upper part of the sternomastoid was a tender swelling, in which could be felt four nodes, and on the right side a swelling one-third as large as that on the left. The thoracic and abdominal organs were normal. The bowels had not moved since the morning before, and she had taken but little milk. Temperature 103.2°F., pulse 140. In the evening of the same day the condition was much the same, except she was somewhat quieter. She had taken a small quantity of milk twice, and vomited once. She had had one small bowel movement, and the swellings in the neck were slightly increased. Temperature 103°F., pulse 144. Breathing quick and short.

April 27. Rested better than previous night. Eyes stuck together this morning. Moves head a little better, but neck still quite stiff. Nervous, and grasps when moved. Nodes on both sides of neck increased in size, those on the right more than on the left, and the individual nodes are felt more distinctly on the right side. The nodes on the back of the neck are felt to be enlarged, and the edge of the spleen can now be felt. Temperature 103.6°F., pulse 120, 7 p.m. Face flushed. Looks worse. Very restless and irritable, and has been so all day. No drooling since noon. Buccal mucous membrane natural pink. Throat looks full, but not red. Whitish coating on tongue heavier. Has taken small quantity of milk twice, and drank water freely all day. Vomited once. No stool. Urine scanty. Nodes felt in both groins. Spleen larger. Breathing hurried, but not obstructed. Temperature 103.6°F., pulse 132.

April 28. Very restless all night, and is still so this morning. Drinks a great deal, but takes no food. Bowels

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moved by suppository. The cervical nodes a little larger. The inguinal are larger, and those on the right side larger than on the left. Nodes can be felt in the right axilla for the first time. None are so tender to touch, and there is not so much muscular soreness. Temperature 102.6°F., pulse 96, p. m. Had a free loose stool at noon. Looks better. Took her usual amount of milk twice to-day, and slept for three hours this afternoon. Slight sweat before and during sleep. Breathing still quite hurried. Is not so nervous and irritable, and shows desire to play, but soon tires. Neck is still stiff, but head is moved more easily. Temperature 100°F., pulse 120.

April 29. Slept fairly well. Has been very quiet, and wants to be nursed. Hacking cough three or four times. Two thin offensive stools. Has taken nearly full meal of milk. No vomiting. Nodes same as yesterday. Temperature 100.4°F., pulse 108, p. m. Slept two and one-half hours. Looks pale and weak. Cross. Neck still quite stiff. Appetite returning. Two small stools. Nodes are smaller. Temperature 99.6°F., pulse 120.

April 30. Rested only fairly well last night, and is quite weak, but not fretful this morning. One thin stool of normal odor and color. Temperature 99°F., pulse 108, p. m. Had one hour's restless sleep. One thin green and brown offensive stool. Irritable, but has shown some desire to play. No change in nodes, except the tenderness in those in the neck, has about gone. Temperature 99.4°F., pulse 108.

On the next three days, during the writer's absence, she was seen by Dr. McClellan, who reported a slow improvement, and no fever. She was somewhat restless on the night of May 3rd, and at times had some difficulty in breathing. On May 4th, she was restless and did not breathe well, and refused to take food. The pharynx was red, and swollen. On the next morning, the symptoms just mentioned, were more severe, and digital examination of the pharynx showed two swellings on the left posterior wall, the upper one an inch in diameter, and soft; the lower, about one-third of an inch, and hard. An unsuccessful attempt was made to open the upper swelling with the pointed finger nail; a guarded bistoury had to be used, and about one dram of pus discharged. There was relief to her breathing and swelling, and it was thought the lower swelling was to suppurate. The remainder of the day and the following night she was very ill. Early the fol-

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lowing morning there was a discharge of thick white pus from the left ear, with much relief to her symptoms. A digital examination of the retropharynx showed both nodes smaller. The ear discharge continued two weeks longer, no enlarged nodes could be found after the third week, except that those in the left neck did not disappear until the fourth month.

CASE II.—Alfred Hook, male, 3½ years of age. Healthy child. One other child, 9 years of age, in the family. On Friday, November 2, 1900, he had a slight cold in his head, but was not ill, nor complaining. He was well Saturday until night, when he complained of his neck hurting. His mother found it stiff and somewhat swollen. He was feverish and sore, and restless all night and the next day. Sunday he was given a dose of castor oil, which caused four small movements in the next 24 hours, but gave no relief to his symptoms. On Monday morning he was seen by the writer. He was fretful and ill; his neck was stiff, with head bent to one side, and he was sore to movements. Over the upper part of the left sternomastoid muscle was a swelling about one-half the size of a hen's egg, rather hard and quite tender, and in it could be felt four nodes. Just back of this could be felt, not seen, four other nodes, somewhat swollen and slightly tender. Careful examination disclosed no other enlargements. The mucous membrane of the cheeks was reddened. The pharynx was not swelled nor red, and there was no coryza. The chest and abdominal organs were normal, although the abdomen was quite full and tender. Temperature 102.2°F., pulse 130, respiration 36.

Tuesday. General condition about as yesterday. Was drooling a little yesterday and this morning—none now. About noon, an hour before this visit, the mother noticed some swelling on the right side of the neck, which, she is positive, was not there at 10 o'clock. It is tender, about half the size of that on the left side, and in it can be felt three nodes in front of and under the upper part of the sternomastoid. The nodes in the left axilla, under the border of the left pectoral, and in the groins are enlarged, all somewhat tender, but not so much so as those in the neck. Occasional slight cough, and at times some heaviness of breathing. This suggested a digital examination of the pharynx, which was made, and swelling was found on the left posterior wall. Tenderness in

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left neck not so marked, but little, if any, change in size. There has been complete anorexia and constipation since the beginning of illness. Very stiff and sore when moved. Urine normal. Temperature 103°F., pulse 144, respiration 40.

Wednesday. Had slight nose-bleed yesterday evening. Mother thought the fever had been higher than before. Very restless night. One thin offensive stool last night, and one this morning. Some appetite. Complained of pain in stomach two or three times. Occasional slight hacking cough. Muscular soreness not so marked. Neck still as stiff. The swollen nodes are smaller, and not so tender. The right side of the neck enlarged to two-thirds of that on the left; the separate nodes in the axilla and groins were one-third to one-half the size of those in the neck. Temperature 101.4°F., pulse 132, respiration 30.

Thursday. Not so well yesterday aternoon and evening, but slept better during the night, and is much better to-day. Plays some, has some appetite, and has had three thin brown offensive stools: Still some muscular soreness, with but little neck stiffness. The abdomen was flat, and on deep palpation the mesenteric nodes could be felt distinctly. All the other swollen nodes are smaller and but little tender. They are the same size on the two sides of the neck. Slight hacking cough. Breathes and swallows easily. Temperature 101.2°F., pulse 120, respiration 24.

Saturday. Is very pale and weak. Plays some, but is easily tired. Has slept well, and the appetite is better. Bowels regular, and the passages are more natural in color and odor. There is still some stiffness of the neck, and the swellings have diminished but little. Temperature 100°F., pulse 120, respiration 24.

On November 15th, five days later, he was seen again. On the 13th he had been feverish and fretful. On the 14th, better. To-day feverish again. On the 17th, temperature 101.4°F., pulse 124. The swollen nodes are going down very slowly. On the 16th, he was better again. On the 17th, temperature 101.8°F., pulse 132. He was given quinine, after which there was no return of the fever. On the 20th, there was still more enlargement, which did not leave entirely for two weeks.

The most interesting question in connection with this subject is that spoken of in the early part of this paper, *i. e.*, is

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glandular fever a distinct disease? If we are to answer this question in the negative, it seems, to the writer, that it can only be that form of influenza accompanied by catarrhal inflammation of the upper respiratory tract, in which there is enlargement of the cervical lymphatics, and comparatively frequent suppuration in the retropharynx and ears. There are certainly no grounds upon which to suppose it to be a modified type of any of the other known acute infections, nor an irregular form of any of the acute exanthematous diseases. This symptom-complex resembles catarrhal influenza in the sudden onset, high temperature, muscular soreness, prostration, and slow convalescence. In catarrhal influenza there is also enlargement of groups of nodes, but this is alway plainly due to, and usually commensurate with, the local lesion, and suppuration is not uncommon. In glandular fever this local inflammation does not exist, or, if present, as occasionally occurs in a few cases, is so slight and evanescent as to be wholly unaccountable for the trouble. The enlargement of the nodes pursues a peculiar and quite regular course, increasing in size as long as the fever continues, new groups from time to time joining in the process with an entire absence of any catarrhal inflammation in these later places in all cases. In influenza the catarrhal symptoms are fully as prominent as the general, the swollen nodes appear sometimes after and not with the beginning of the disease, and only in such situations as will be accounted for by local lesions, and the enlargement continues after the subsidence of the catarrhal process. Almost all theories point to this trouble as an infection from the intestinal canal, and the facts seem to warrant this. The milder cases are accompanied by diarrhea, the severer by constipation, and there is no change in the patient's condition until this is involuntarily relieved. Influenza is an epidemic disease, affecting adults in preference to children, while glandular fever is restricted to house epidemics, and rarely, if ever, affects adults. This receives special mention by Pfeiffer, and was particularly shown in the epidemic watched by Dr. F. A. Korell, of Businessburg, and detailed in the paper mentioned above. The descriptions of Pfeiffer, Filatow, and Heubner were published before the recent pandemics of influenza began in 1889. Influenza is generally ascribed to the bacillus of Pfeiffer, but no bacteriologist who has examined cases of glandular fever has reported the finding of this bacillus.

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Some Personal Observations of Malarial and Blackwater Fever on the West Coast of Africa.

BY VILRAY P. BLAIR, M. D.,

ST. LOUIS, MO.

LATE SURGEON IN AFRICAN ROYAL MAIL S. S. CO., OF LONDON, ENG.

I HAD not been at sea a month before my curiosity was permanently piqued by the partly fabled, partly true tales of the wealth, the dismal forests, the great rivers, the savagery, the mahogany, the gold and the curios of the surf-bound, fever-stricken west coast of Africa, which has furnished gold, ivory, and slaves to the civilized world from time immemorial; the Phoenicians traded beads for gold, and the Portuguese and Dutch swapped fire-locks for human flesh.

It is not surprising, then, after listening to these tales for several months, that I should, within three days of my return to Liverpool have signed on the "Biafra," an African Royal mail liner, for a three months' cruise to the "white man's graveyard."

I had not only the curiosity of an ordinary traveler, but my opportunities of observation of the fevers of the Javery, yellow-jack, and beri-beri in the Brazils and leprosy in the islands, had taught me that there were advantages in studying endemic diseases in their native habitat, which could never be had under the artificial surroundings of the highly-civilized temperate zone. The "Biafra" offered exceptional opportunities for my purpose. She was a model ship of 5,000 tons burden, which had once been selected as worthy of entertaining the King of Belgium. Besides passengers, she carried a full cargo, and after depositing her tourists at the islands, was to strike directly from the Canaries to Sierra Leone; then coast down the Liberian, the Kroo, the Gold, the Slave and the Ivory coasts, and then cruise up the Niger delta, and spend two week in the river. Then coast up the Sierra Leone and the Ilesde Los, gathering a cargo of oil, mahogany, rubber, and returning invalids, before starting on the two weeks'

Read before the Medical Society of City Hospital Alumni, October 3, 1901.

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run to Liverpool. In my anticipation of opportunities of observation, I was not disappointed, as in the proportion of fever we had aboard, we quite broke the record of several years.

To render this coast totally unfit for human habitation, devoid of gray-haired negros, where all government officials are employed for one year's service, with six months' vacation between services; where seven years of such service is sufficient to earn for a government servant a life pension—if he lives to gain it—and to earn for it, next to Panama, the title of the deadliest of all fever-stricken coasts, I believe that two factors co-operate with each other in perfect harmony. These are the malarial infection and the climate. With the former you are familiar. Of the latter, I will, at the risk of imposing on good nature, say a few words.

The term "West Coast" ordinarily applies to that portion of Western Africa extending from Senagambia on the north to somewhere about Waufish Bay in German, Southwest Africa on the south. It is surf-bound throughout its entire extent, gives exit to the Niger and the Congo, besides smaller rivers, and presents a variety of scenery. The high verdure-covered mountains of the Sierra Leone give place to the low hills and flats of the Liberian and Gold coasts. The delta of the Niger, except by the creeks, is an impenetrable man-grove swamp; while to the south, is a desert as sandy and as arid as Sahara. In places, great salt marshes poison the air with a most sickening stench, while its tracts of dark forests are primeval. In spite of this variety, it presents such an unvarying picture of death and desolation as to bring it all under the one generic term. Throughout its whole extent it is tropical and, except in the desert portion, the year is divided into a very short dry, and a prolonged wet season. During the latter there is great rainfall, sometimes continuing incessantly for days at a time, and whether in rain or shine having a damp, depressing atmosphere which tends to render one exceedingly irritable and morose, and to foster a constant desire, I might say in some a need, for at least mild alcoholic stimulation. In all parts, food has to be imported. Cattle can live in but few places, and do not remember to have seen a horse in the nine weeks I was there. Goats and chickens can be had in most places, while in a few fish are abundant.

The white residents live either in stone or mud houses, in

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the towns in the older settlements; or in elevated corrugated iron bungalows, in the newer. Where possible, these are placed on elevated ground and from the edge of the clearings, but in many places they abut on the jungle, or are surrounded by scarcely sufficient solid dry ground for domestic and commercial purposes, having the connecting paths of offices, bungalows and factory, formed by throwing up mounds of earth. In most places the effort is made to get the water supply from rain collected in sectional cast iron cisterns. In all stations of but even a few years' existence, the graveyard is a prominent record of the past, while the isolated bungalow that has not one or more white crosses in its miniature garden is a rare exception. Ordinary avocations require long trips to be made into the interior by hammock or canoe, and nights and weeks must be spent in natives huts on the rivers, in the jungle or in the mahogany camps. When I was there, the Ashanti war, with its forced march to Cumassi, entailed hardships that were past endurance by many a sturdy Briton.

The fever is of the estivo-autumnal variety, rarely tertian, usually quotidian,[1] occurring most frequently in June, July and August, disappearing entirely in the very dry season of December. I was on the coast in September, October and November, 1900, but as the rainy season had been unusually protracted, fevers were common.

The usual history of a newcomer is, that a man under thirty-five years of age, who has passed a physical examination in Europe, lands first for about three days at Sierra Leone. This is a mountainous coast, rising abruptly from the water, some peaks reaching an elevation of nearly 2,000 feet. Viewed on a clear day, with its open hillsides, its palm groves, its picturesque settlement, and its green terraces, it looks like one of Nature's health resorts—but it isn't. After two weeks of seasickness, overfeeding and want of exercise, the opportunity for hammock excursions on the shoulders of the bearers, and the novel sights of Freetown, tempt the novice to unwanton activity during the stay, and incidentally to expose himself to infections of several kinds. Then three weeks' coasting, of the nature of a more or less continuous sightseeing picnic, brings him to the rivers, and after visiting several stations, his immediate destination is reached. Here he either takes up the duties of his newly-chosen life, or proceeds farther inland, with possibly having the plasmodia already

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multiplying in his veins. He is warned against going in the sun without a pith helmet, exposure to chill of the night air, the dangers of constipation, overexertion, etc., but probably the thing he notices most is the change of food; and in the wet season, the continual rain. It is not long, as a rule, before the depression of the climate begins to show, and usually before three months, there is a chill and a sharp rise of temperature, repeated for several days, till quinine takes effect. This usually recurs from three to twelve times in the first year, with more or less chronic poisoning between times, till the patient is carried off by blackwater fever, is invalid at home, or acquires a more or less immunity. The patient seldom dies from the first attack of uncomplicated fever, nor can he ever be sure that his immunization is complete; any wetting, exposure to the sun, or indiscretion at any time may bring on an acute exacerbation, and it is in the older residents that fever in itself is most dangerous. While on the coast, or exposed to the stimulating sea air on the trip home, or even months after arriving in Europe, there may be an acute explosion, hyperpyrexia, and death within a few hours. These cases are sufficiently uncommon to be noticeable, but I have the authority of government surgeons that two such cases occurred in Sierra Leone within a month, while I was on the coast. One victim was the guest, the other, was the host at suppers, and in both cases they were dead before 6 a.m. Such occurrences in apparently healthy individuals in Europe and also on board the ship en route are on record. The majority of residents have a sallow complexion, and it is seldom that you see the healthy bronze that should come from exposure.

Early in October, we crossed the bar and entered the Forcades river, one of the mouths of the Niger, and spent two weeks in the narrow channels of the delta which is interesting and as evil a place as there is on the coast, and it will be principally observations made here and after leaving that I shall present.' In between one and ten days after leaving Forcades river, seventeen of the crew, including myself, were taken with the fever. Its distribution seemed to be in proportion to the exposure of the individual to the sun. The engineers and firemen, though subject to dysentery, neuralgias, diarrhea and heat apoplexy, were, without exception, exempt. Among stewards, whose duties were between decks, there were no cases. Of the seamen, who worked on deck

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cleaning, chipping and painting, all, with the exception of one prentice, were taken down, while the quartermasters, who worked under the cover of awnings, escaped. Of the stewards, whose duty required exposure on deck, several were attacked. One of the four mates had fever, while I, who had exposed myself to both sun and the cold of the night, felt the first symptoms when my duties required me to spend a considerable time in the hot forecastle. I saw two cases in which there was a chill, a sharp rise of temperature and sweating, with no return during the voyage. These were old coasters, and afterwards both had severe attacks in England, one being carried from the ship unconscious. There was one case of a continued, irregular fever, lasting four weeks, that seemed little influenced by quinine. I must mention, in this case the quinine was given only by mouth. All the others, except my own, were more typical cases of estivo-autumnal fever. After twenty-four hours malaise there would be a hard chill, lasting an hour or so, followed by a rise of temperature of 104 to 106°F., with vomiting, headache, great pain in the back and back of the thighs and legs, tenderness over the liver and spleen. Bilious vomiting was constant, and sometimes so persistent as to preclude feeding and medication by mouth. Constipation was present in all cases. During this stage the urine was scanty, the skin dry and hot, the eyes glazed and staring, and the whole picture was one of extreme discomfort and a deadly illness. Under proper treatment the fever declined to about 102°F., and in most cases, in which there was not a recurrence of the chill, convalescence was established within a week. In the treatment of these cases, quinine at the proper time is essential; phenacetin, properly used, is useful, but must be handled with care on account of its depressing effects and the poor reaction in that climate. I saw a severe collapse, lasting two days, after five grains of antipyrin, in which I though I would lose the patient. The proper treatment, as learned from Government doctors on the coast, and practiced with good results myself, is during the hot stage to cover the patient with a number of blankets, and administer hot drinks with the view of producing a sweating. At this time five grains of phenacetin may be given, but it is not considered the best routine practice. During this time the temperature must be carefully watched, but as long as it is not above 106°F. there is no indication for changing the

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treatment. After a time a most profuse sweating is established, which, unless there is an exacerbation of the fever, continues from one to several days. The patient relaxes, and, though weak, is comfortable. Quinine is administered in large doses, and the patient recovers. If the temperature continues to rise over 106°F. and sweating does not occur, then other means must be tried, usually cold baths with ice, if obtainable. Here the prognosis is extremely grave, and it is these cases that succumb to pyrexia, with locked secretions. Personally, if I had such a case, I would try hypodermoclysis and pilocarpin, but I could find no record of such being used. I once tried antipyrin, with the aforementioned result. During the hot stage, despite the pain, the greatest discomfort is an internal feeling of pressure and heat, and the relief which comes with the sweating is most grateful. Though bringing relief, the sweating produces a discomfort of its own. It is of an exceedingly irritating character, and when first starts gives the sensation of fire, and after twelve hours often so irritates the sweat glands as to cause a dark confluent eruption on the back, thighs and arms. There were some cases in which there was a great tendency to drying of the skin, with recurrence of moderately high temperature, necessitating repeated sweatings. It was not until I learned the use of bimuriate of quinine hypodermatically that these cases followed the same satisfactory course. I believe this to be the only proper way to give quinine there, as absorption from the stomach is very doubtful. I took from one to two grams a day for three weeks, without noticing a single evidence of its absorption. I learned this from Dr. G. N. Taylor, a Government official, and a passenger to whom I was much indebted both for his kind offices and his profound knowledge in handling these cases. Dr. Taylor was a typical West-coast invalid. He had been sixteen months at Quitta, where he had had repeated attacks of fever, but had not been relieved from duty. He had been carried to the surf boat, and had occupied a couch on the deck. He assured me he needed no other attention but sea air and food, and as I had all I could attend to, I left him, having gained the impression that he was a very sick man of fifty or sixty years of age. Two weeks later, when I was obliged to request him to attend the crew and myself, I found a marked change, and when he left us at Teneriffe, he was a splendidly-built athlete of thirty-three

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years of age. Such are the opposing effects of continuous malarial poisoning and sea air.

With the white residents on the coast, malarial fever is regarded very much in the same light as the teething of infants in civilized countries—something that must be gone through with, and it is the character and intensity of the manifestations that interest them. Few escape, and the instances are notable. Among the natives of the coast, fever is almost unknown, though I saw a black in Liberia, who, after a residence of some years in the states, had several attacks on his return. The Camaroons coming from the interior to work on the coast are subject to it,[5] as are the Chinese laborers on the Congo railroad.[6] Fortunately, I had no deaths aboard the ship, but here deaths are rare, except among returning invalids; their time of greatest danger is the first contact with the cold air. In the case of Belgian laborers coming from the Congo, who are rather addicted to absinthe the first few days at sea, often brings an enormous mortality. I might mention that among the Belgians on the Congo is the only instance I know, of the employment of white labor on the coast where exertion and exposure to the sun are distinctly dangerous. In the early days, in the '20s and '30s, before the intelligent use of quinine, as we understand it, and the abolition of salivation and bleeding, the death rate in the garrisons at Sierra Leone ranged from 50 to 70, and even 75 per cent a year, while at Cape Coast Castle it ranged from two-thirds to the whole of its mean strength.[16] Old sailing masters have told me that in vessels lying in the Niger creek, it sometimes reached 100 per cent in a few months. I have been unable to obtain authentic figures of the death rate amongst the Whites at present. I can mention those that were given to me by residents in different places which I visited, and I had no reason at the time to disbelieve my informant. If you wish you can make allowances for exaggeration. In the Ilse de Los, out of 157 white residents 34 died in the wet season of 1900. At Sapelli, a new station high up in the Niger delta, well situated on a clay bank at an elevation of about fifteen feet above the creeks in a clearing a mile square, seven of the thirteen whites who had been stationed there had died. At Arkassa, which boasts twelve white residents, I counted over twenty graves. Allowing for almost any exaggeration, when you consider that these deaths are amongst men who have passed

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a medical examination, and are more or less constantly under medical observation, with the privilege of being invalid at home at any time it is necessary, these figures are at least suggestive. The difficulty of transporting instruments, and the fact that medical officers are, as a rule, more or less debilitated by sickness and overwork, blood examinations are not as constant as could be wished, in fact, are rather neglected; but from the blood slides[11] and the post-mortem specimens sent to Europe, and from the work of the more energetic on the coast, there is no doubt that this fever is identical in its etiology with the estivo-autumnal fever of Italy and other places.

To me the subject of prophylaxis by general sanitation looks almost hopeless. The deltas can not be drained, and the death rate in the older towns and cleared uplands and in the Sierra Leone mountains is, after making allowances for better care, received no less than that in the jungle. Enlargement of clearings, the extension of commerce, the opening of gold mines, the execution of drainage, where possible, may improve these general conditions; but, until these changes are of such magnitude as to effect the atmosphere, I believe that little will be accomplished in this line, and that the resident will have to depend upon proyhylactic measures of a purely local and personal nature.[25] One of the greatest helps to this end has been, and will continue to be, the African Royal Mail Steamship Company. These enterprising people send vessels to every point along the coast and up the creeks, where a stick of mahogany or a puncheon of oil can be obtained; and, though its primary object is commerce, it brings food, the comforts of life, the means of execution, the services of its surgeons, and safe transportation to the whites that love of gain or adventure have tempted into this death-dealing wilderness. It is most liberal in its policy, and it will be many years before any of the newer lines will be able to show a record of equal good accomplished. The prophylaxis by the individual must be worked out on two distinct lines. First, the avoidance of infection, and secondly, the prevention of its development, after inoculation has occurred. As to the first, I take it for granted that the bite of an infected mosquito, of the variety of the anopheles, is the only known mode. By following the rules given by the Liverpool Society of Tropical Medicine, properly located bungalows may be

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freed from mosquitos of all kinds, and most easily of the anopheles, but still, though some hold to the contrary, I do not believe it possible for people following ordinary avocations in the tropical bush to absolutely avoid being bitten. Besides this, there is another element of danger which, no matter how imperfectly understood, has been too constantly and universally observed in malarial countries as having a causative relation to, if not a direct cause, of infection, to be disregarded. This is the disturbing of the earth either for agricultural or building purposes. This fact is so forcibly demonstrated by the history of the occurrence of fever on the West coast, that in Sierra Leone excavation for building purposes is regulated by legislations to certain seasons, and on the upper Niger, where large coffee plantations are being opened, and where fevers are not as rife as on the coast, outbreaks of malarial and blackwater fever have at times been confined to those engaged in tilling the soil. On one plantation three gardeners in succession died of blackwater fever,[6] and unless, as Fisch has suggested, this is due to the fact that the unevenness resulting from digging furnish an extra number of congenial breeding places to the anopheles, we have a totally unintelligible source of danger, which accentuates the importance of the second consideration in prophylaxis, the retarding of the development of the invading organism. I believe the most rational means is the regular administration of quinine. This is advised by Plehn in the Camaroon, who has seen good results among government servants, where it is compulsory, though he warns of the special danger in that country of its exhibition being followed by blackwater; and Koch expresses the hope that by this means malarial and blackwater fever will be stamped out of existence. Beyond this the ordinary rules of hygiene, with special reference to the peculiarities of the climate, should be followed.

If. in the presentation of my subject I have dwelt too long upon environment, I beg to offer as excuse that anyone who has observed diseases in this country, must be impressed with the fact, that though specific infection is necessary, the majority of the manifestations are influenced by, if not due to climatic peculiarities.

No mention of fevers of this country, no matter how terse, would be complete without more than a passing notice of the blackwater fever, which, by most observers, is con-

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ceded to be a complication of malaria, and which is responsible for more deaths than all other diseases of the coast combined.[6—7] Its mortality is variously estimated from 20 to 60 per cent. In 167 cases of sickness occurring in the Camaroon in 1897, reported by A. Plehn,[8] 138 of which were malaria, 12 were blackwater fever, and 17 from other causes; there were 8 deaths, 5 of which were due to blackwater fever. The first attack rarely occurs before a six months' residence, usually after several attacks of simple malaria, and never after three years, though once having had it a person is subject to fresh attacks at any time. Crosse reports one primary case, occuring in England in a returned coaster.

It commences with a chill, a sharp rise of temperature, and within twenty-four hours the urine is of a color varying from claret to porter. At the appearance of the hemoglobin in the urine, the fever subsides; there is always a pronounced icterus, and a green bilious vomit is always constant and distressing,[6—13] though there is never bile in the urine. In favorable cases the symptoms subside, the urine resumes its normal color, and recovery takes place in a few days. Relapses are frequent, and though apparently of a milder form, are more often fatal. In fatal cases the symptoms all persist, the pulse becomes rapid, hiccoughing ensues, patient becomes heavy or comatose, the urine scanty or suppressed, and vomiting continues. Death results from exhaustion or uremia. Diagnosis is based upon previous attacks of malaria, the chill, the green vomit, the icterus and the black water, the absence of bile in the urine and the rapidity of the pulse. It has been confounded with yellow fever, but in the blackwater fever the icterus is more pronounced and the pulse rate increases; there is no black vomit and no irritation of the skin, which accompanies true icterus[12] of the yellow fever. In blackwater fever the vomit is always green, while in early stages of yellow fever it is light-colored. Its morbid anatomy seems to be fairly constant. Large quantities of erythrocytes are destroyed in the capillaries of the liver and spleen; the liver, kidney, and spleen are enlarged, and less pigmented than in ordinary malaria;[2] the kidneys are hyperemic, cortical substances pale and yellow, pyramids brown-streaked, and tubules affected by cloudy swelling; the collecting tubules are filled with pigments and cells,[2] and are degenerated. Suppression, according to Sambon, is due to degeneration and blocking. The

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principal change in the blood is due to the rapid destruction of the red-blood corpuscle, which fall to one-third the normal in twenty-four hours, rapidly degenerating with nucleated red-cells[5] and corpuscles of various sizes. The urine is acid and of a high specific gravity with deposits, which Sambon regards as broken-down corpuscles, and Crosse ascribes to kidney cells. It rarely contains bile;[12] albumin is always present, and the color is due to metahemoglobin, never to red-cells.[5—10] The parasite of malaria has been found in the blood by many observers, and more often in the brain and spleen, when not observed in the peripheral circulation. It is a well-known fact that in typical estivo-autumnal fever the parasites are often absent from the peripheral circulation, when present in the larger vessels and the viscera. There is also a rapid destruction of the parasites at the appearance of the blackwater, and in most cases quinine has already been given, so that not finding the plasmodia in all cases does not signify that they are not malaria. Plehn found the parasite in seventeen out of forty cases,[4] recognized it as identical with that of estivo-autumnal fever, and states that they are not necessarily present in the peripheral circulation. Mannaberg[17] warns against looking for the parasite after quinine has been given, and late in the disease. Koch has found it in a fair percentage of cases, and F. Plehn[23] states that it will always be found if the blood is examined early before the blackwater fever occurs. These findings have been substantiated by most observers, though some have found the parasite in a very low percentage of cases.[22] The most satisfactory and complete work on the subject of the parasites and other evidences in the blood has been done by Stephens.[21] After stating that negative results as to the finding of the parasite does not mean the absence of malaria, in which he is substantiated by Turk, he notes numerous cases of malarial fever in which a few were found only after most prolonged search. He states that the presence to the amount of 20 per cent or over of large mononuclear leucocytes means malarial infection, and that the presence of large and small pigmented leucocytes are important the diagnosis. He then gives a tabulated list of sixteen cases of blackwater fever which, clinically and from the presence of either the parasite, pigmented leucocytes, or the percentage of large monocucler leucocytes or of the pigmentation of the organs were undoubtedly malarial; but in only three of these

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were the parasite found, and one had been examined early before the black water supervened. I have mentioned these findings at length on account of the disagreement among observers as to the etiology of blackwater fever, and we will now take up the most plausible theories. These are:

1st. A malarial complication.

2nd. Quinine poisoning.

3rd. That it is a specific disease.

The malarial theory can rest with the evidence already adduced. Sambon is the most weighty champion of the theory of a specific disease, and bases his belief first upon its geographical distribution, which has lately been disproved,[16] and on the occurrence of a hemoglobinuric fever in sheep, cattle and goats, which is due to a parasite, and concludes that the same is the case of the disease in man. Want of space prevents me from citing all the evidence that can be brought to bear against this, but the lack of positive evidence of such a specific organism, and the overwhelming evidence in favor of the other two theories, I believe justify the dismissal of Sambon's explanation.

The quinine theory was first suggested by Veretos, in 1858, and has received support from the Greeks, Tomaselli, and Koch[3] and the other German observers; and all bring forth a formidable array of figures to their support but Koch always, and Plehn[4] lately, its most staunch advocates, will not say that quinine in ordinary doses can produce blackwater fever, without previous malarial infection, and though Plehn[4] and Crosse[5] and other English physicians have recorded cases where no quinine had been previously given, still all of the English practitioners I met on the coast had observed an apparently more than accidental relationship between the administration in large and small doses and the development of blackwater fever. During a malarial paroxysm there is an enormous destruction of red-blood corpuscles, and it has been demonstrated that hemaglobinuria can be produced in dogs by the administration of quinine. To anyone who has observed a very severe malarial paroxysm on the coast in the dry stage, when all the secretions are checked and where there is every evidence of a most acute intoxication, it would not take a stretch of the imagination to see how the adding of the extra poison of quinine at this time might develop serious damage of the blood and kidneys, and I believe that

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Stephens has struck the keynote in his conclusion that blackwater fever is essentially malarial disease, in which quinine is the most common immediate determining cause of intoxication; and that protection from malaria will protect from the blackwater fever.

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[17]Mannaberg, in Die Malaria Krankheiten, 1899, s. 225.

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[19]Dr. Moffat, in British Medical Journal, Sept. 24, 1898, p. 926.

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[21]Stephens and Cantab, Lancet, 1901, Vol. I, No. 12, p. 848.

[22]Zumann, in Centralblatt für Baktiriologie, states that the severity of the attack bears no relation to the number of parasites.

[23]F. Plehn, in Die Kamerun Küste.

[24]Klima und gesundheitsverhätnisse des schutzgebietes Kamerun in der zeit vom 1. July, 1897 bis den 30. Juni, 1898.

[25]In the sand desert surrounding Waufish Bay in German Southwest Africa there is a dry river bed, the Swokob, which is flooded once about each ten years. For about seven years previous to this event fever was unknown in this region, but for about three years afterwards

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there was a growth of of wild grass in the river bed, and fever is rife.

[26]Johnson on Tropical Climates, p. 433.

Reports of Major Tulloch.

[27]W. A. Bryson, Lancet, Sept. 4, 1847.

[28]Dr. Frank Fry, of St. Louis, tells me that he has seen a genuine case of hemaglobinuria coming on during the use of chlorotone in a neurasthenic, which was relieved upon discontinuing the drug.

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Purpura.

BY G. M. TUTTLE, M.D.,

ST. LOUIS, MO.

IN the latter part of November, 1900, I was called to see a boy 3 years of age, previously healthy and of good heredity, who had been suffering for two months from pains and tenderness in his joints, leading to a marked disinclination to move about, and accompanied by considerable swelling of the joints of both hands, elbows, feet and knees. At the same time, and from the beginning, he had had recurrent purplish spots breaking out at intervals on all four extremities, which, as they passed away, left marked discolorations in their sites. There was no bleeding from the mucous membranes. He had been treated during this time without result, and evidently without diagnosis by a homeopath.

When I saw him, he appeared very anemic and asthenic, and his skin was quite puffy. His left knee was still considerably swollen, tender and disabled. His right elbow and wrist were excessively painful on motion, but not objectively swollen. On the anterior and lateral aspects of both legs were many discolorations, due to fading of old petechiæ; and a few scattered ecchymoses were present in the neighborhood of the right elbow. One of these appeared swollen, and distinctly tender on palpation. His heart action was quite rapid, but no murmurs or other abnormalities were present. Lungs, liver, spleen, and abdomen were normal. The urine was of a sp. gr. of 1034, albumin 1 per cent, no sugar. Red and white

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Read before the Bethesda Pediatric Society, December 27, 1901.

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cells abundant. Crystals of calcium oxalate, but no casts. There was no fever.

The boy was put to bed, on a nourishing diet, including an abundance of fresh milk, and was given five grains of sodium salicylate every four hours, and Blaud's pills three times daily. He responded rapidly to this line of treatment, and by the middle of December the albumin had decreased to a trace, the red cells became infrequent, and the joint pains were virtually gone. Later, he was allowed up, the salicylate was stopped, but the iron was continued until his anemia had disappeared and his strength returned. By the end of December the urine cleared up completely, and the boy became well. There has been no recurrence since.

Here is a rather characteric picture of that form of purpura which is called purpura rheumatica, or peliosis rheumatica, or Schönlein's disease. In itself it presents no peculiarities, but may serve as a text for a consideration by the society of some of the interesting problems connected with the pathologic and etiological relations of this large class of conditions which are called purpura, and of which our knowledge is far from exact.

Purpura itself is really more of a symptom than a disease, but for the present we must retain the term and treat of these cases as if they constituted a definite entity. The various forms of purpura are classified for clearness of description and for purposes of comparison, but all the classifications are artificial, and necessarily so, as we, as yet, have not enough definite knowledge of the real nature of the disease on which to base our claims. Some classification, however, will be of use in our present study—and I have chosen an etiological list of conditions under which purpura occurs as most to the point.

I. *Vascular Purpura.*

(*a*) Infective (diseases), variola, measles, scarlet fever, cerebro-spinal fever, syphilis, typhus, typhoid, malaria, septicemia, pyemia and rheumatism, which we may include in this class.

(*b*) Due to presence of organic matters in excess in the blood, as bile, urinary ingredients, snake and insect poison.

(*c*) Presence of extraneous chemicals in the blood, phosphorus, mercury, mineral acids, iodid of potash, potassium chlorate.

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(*d*) Conditions in which some unknown element may be lacking in the blood—as scurvy, malignant disease, and cachectic and debilitated conditions.

(*e*) Cryptogenic changes in the blood itself, as the various forms of anemia and leukemia.

II. *Mechanical Purpura.*

(*a*) When there is an impediment to the circulation, either general or local, as in diseases of the heart, lungs or blood-vessels; in thrombosis or tumors; or in convulsive seizures, as whooping-cough, epilepsy or angina.

(*b*) Where the natural support of the vessels is destroyed, as in convalescence from severe or wasting disease; or in the wasting and vascular degeneration of senility.

III. *Nervous Purpura.*

Seen often in tabes, neuralgias, myelitis and hysteria.

IV. *Congenital Imperfections of the Blood-vessels.*

As in purpura neonatorum, hemophilia and the hemorrhagic diseases of the new-born.

In analyzing these various forms of purpura we are at once struck by the fact that changes in the walls of the blood-vessels or in the composition of the blood flowing in these vessels, could account for virtually all of these cases, *e.g.*, in the "congenital," the "nervous" and the "mechanical" purpuras we can easily imagine that some cause may increase the permeability of the vascular walls and lead to extravasations of blood elements in the tissues; while in the so-called "vascular" purpuras the causes seem to be circulating in the blood-toxins of the infectious diseases, organic constituents (in excess) of the body, chemical substances mainly introduced as drugs, unknown substances, present or absent, in scurvy and other cachexias, and changes in the number and proportions of the cellular elements of the blood itself.

So far we can go, and very little farther—but the investigation seems to bring us to the brink of a more perfect, and it may be, a correct pathological knowledge of this condition. At any rate, we now look on bacterial toxins as chemically very closely related to the drug alkaloids, and, again, to the various end products of tissue metamorphosis, and, again, to animal venoms, all of which are recognized as "causes" of purpura. So that we must consider that the evidence is strongly in favor of "infection" in a general way as the essential element in this disease. In the same way modern path-

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ology tends to the belief that the various conditions included under the "hemorrhagic diseases of the new-born," especially that form where the bleeding is from the digestive tract, are due to infection from the same tract. At any rate, treatment of melena based on this principle is more efficacious than other methods. Of course, we can not overlook the fact that in young infants the blood-vessels themselves may be and often are found to be imperfectly developed and immature.

The pathologists have helped us somewhat. In some cases the free blood in the tissues has been found to be only an excessive diapedesis of cells through an unbroken vessel wall; in other cases actual, but minute rents have been found through which the corpuscles escaped. Unna found that it is the veins that give way and has pointed out that the laceration occurs easiest and most often at the point of junction of the superficial part of the subcutaneous tissue with the deep part of the cutis. At this point the vascular resistance is at a minimum as the, vessels lose their adventitia here and lack the support of the elastic cutis. A hyaline degeneration of the elements of the vessel walls has been found. But probably all these changes are due to degeneration of the vascular walls by the chemical poisons in the blood—this being the cause of the hemorrhages rather than that the weakened walls are the inherent defect.

Various bacteria have at one time and another been isolated in these cases, but as yet no one definite form has been found with sufficient frequency to enable us to consider it specific. In some diseases, however, notably anthrax, germs in large numbers float in the circulating blood; and, yet, this disease is not accompanied by blood extravasations. So we are lead back to the position that chemical poisons, of various origins, as above stated—bacterial, metabolic, or extraneous—cause some solution of the cells of the vascular walls. Where a so-called "mechanical" or "nervous" element enters into a case we must suppose that there is a double etiological relationship, as is the case in almost every abnormal condition, but that even here there is some unknown toxin, possibly emanating from an intestinal fermentation, which is the actual factor in causing the escape of the blood—the "mechanical" or "nervous" or other elements simply predisposing. A few of the bacteria which have been isolated in cases of "purpura" of one kind or another are Letzerich's bacillus purpuræ, which

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produced in animals and in the investigator's own person a hemorrhagic condition. Streptococcus pyogenes has been found by a number of different investigators; by others the staphylococcus pyogenes aureus has been isolated. Fischl and others claim to have produced a fatal anemia in animals by inoculation with a coccus they isolated, and from the blood of these obtained a diplobacillus which produced hemorrhagic sepsis in other animals. Frankel's pneumococcus has also been obtained. Pneumococcus lanceolatus, bacillus pyocyaneus, bacillus coli communis, and bacillus aerogenes capsulatus have also been found. But with all this array, many cases have shown negative cultures even in the hands of skilled bacteriologists. One further point is of interest: In the arthritic variety especially, but even in all, salicylic acid seems to be the best drug means of combatting this disease, and salicylic acid is looked upon as one of our best antizymotics for internal use. Its good effect in acute rheumatism, with the modern view of this disease as a toxic infection with its lesion in the joints, is due to this antagonistic action that the salicylic acid compounds have over all infectious processes.

In the blood itself not many marked changes are found. Its coagulating power is usually delayed and feeble, the clot itself being unsubstantial. The blood-platelets are also found much reduced. A moderate diminution of the red cells is ordinarily present, averaging some 3,000,000 to the c.mm. Microcytes are rather numerous among these. Nucleated red cells occur when hemorrhages have been frequent.

Leucocytosis has been noted by most observers—Carriere and Gilbert reporting 120,000, and Ewing 56,000. These were made up of polynuclear leucocytes mainly, with a slight increase of the eosinophiles.

But even these changes in the blood itself—the diminished coagulating power, the reduction in the number of blood-platelets, the anemia with its small number of erythrocytes, and the leucocytosis—do not bring us nearer the goal in investigating the pathology of purpura. We can, at least, without great objection, suppose that these blood changes are all secondary and that they as well as the hemorrhagic tendency, which is the interesting symptom of the symptom purpura, are due to chemical action of toxins, organic or inorganic, until further investigation proves us mistaken.

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The Early Diagnosis of Measles.

BY PHILIP NEWCOMB, M.D.,

ST. LOUIS, MO.

HOUSE PHYSICIAN TO THE BETHESDA HOSPITAL AND THE BETHESDA FOUNDLINGS' HOME.

DURING the year 1900, according to the "Bulletin of the Census Bureau," there occurred in the United States 12,866 deaths from measles. This mortality is double that of scarlet fever, more than three and a half times that of small-pox, and four and a half times that of erysipelas for a like period.

When variola or erysipelas is suspected, the physician seizes upon every bit of evidence presented upon the skin, or elsewhere, to make a positive diagnosis, and establish a thorough treatment and rigorous quarantine.

In scarlatina the tongue, together with the buccal and pharyngeal mucous membranes, are examined in addition, to justify an early isolation and appropriate medication.

These three diseases are regarded as extremely serious, not only for the patient in respect to prognosis, but also to those about him as regards a further spread of the infection. Measles, on the other hand, has come to be considered one of the necessary evils of childhood—regarded too often as a "bad cold," before the characteristic eruption upon the skin corrects the diagnosis, and treated too carelessly thereafter, in view of the list of complications which may appear during the course of the disease and the ills which may be subsequent.

In an epidemic of 96 cases reported by V. Adriance,[1] the mortality was 16 per cent; in scarlatina of a mild type we would expect from 5 to 10 per cent, running above 20 per cent only in epidemics of great severity.

An early recognition of measles would permit a more thorough and systematic treatment from the beginning, together with a prompt segregation of each individual case, reducing greatly thereby the probability of an intercurrent catarrhal- or broncho-pneumonia. Such an aid to diagnosis is to be had in Koplik's spots appearing upon the mucous membrane of the lip and cheek; they are found at the beginning of the disease when the diagnosis is doubtful, constituting a

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pre-eruptive pathognomonic sign and, so far as known, of this disease alone.

Koplik's sign consists of small, irregular bright-red spots, with a minute bluish-white speck in the center of each spot, very slightly elevated upon the inflammatory base. As the skin eruption begins to appear the buccal exanthem increases in intensity, the background becomes a different red with a larger number of the bluish-white specks scattered over it. The red background soon begins to fade and the fine gray or bluish-white spots also disappear about the time that the efflorescence on the skin reaches its height. Microscopically the white summits are found to consist of masses of epithelial cells undergoing a fatty or necrobiotic change.

The value of Koplik's spots in making possible the diagnosis of measles during the first four days of the disease, has been generally accepted in this country. Their worth is attested, moreover, by such observers as Cohn,[2] Baginsky,[3] Slawyk,[4] and Carl Seitz[5] in foreign literature.

During a recent epidemic of measles at the Bethesda Foundlings' Home I had the opportunity of observing sixty cases, especially in reference to the existence and nature of this sign. From that study the following conclusions were reached:

1. *Koplik's spots may be found upon the buccal mucous membrane before any trace of the eruption appears upon the skin.*

This was found to be true in 22 out of the 60 cases—a trifle over 36 per cent of the total. Of these 22 cases, 8 showed the phenomenon a full forty eight hours before the first sign upon the skin, and 14 cases showed the sign twenty-four hours previous. The accompanying table demonstrates this fact.

2. *Koplik's spots are present in all cases of measles.*

This has been a matter of some dispute among some observers. However, the pathology of the phenomenon would at least suggest the probability that the spots are to be found in *every* case, be it observed at the right time and under favorable conditions. As already mentioned, the microscope shows these spots to be composed of epithelial cells in which fatty or necrotic change has taken place; what is really seen is but the fine scaling of the buccal mucous membrane.

The important inference is drawn from this fact, by Dr. Zahorsky,[6] that Koplik's spots constitute a furfuraceous des-

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quamation of the mucous membrane which is entirely analogous to the desquamation of the integument. We know that this latter does occur in every case of measles—is it not reasonable to expect a like scaling of the mucous membrane in each instance?

V. Adriance[9] has observed Koplik's spots in 76 per cent out of 96 cases; Howland[10] has found them in 84 per cent of an epidemic of 61 cases; R. G. Freeman[10] has met about the same proportion, and Cohn[11] found the sign present in 16 out 22 cases, or about 72 per cent. These are liberal estimates, it is true, but upon the other hand, Knoespel[10] was able to demonstrate Koplik's spots in all of 41 cases; Slawyk,[13] who also determined the histological nature of the spots,[15] observed them in every one of 32 cases.

In the 60 cases I have studied in not one was the sign absent and always best seen, the spots more numerous and distinct, just before the eruption on the skin reached its height. In view of the above, I would be led to expect the appearance of Koplik's spots in the early stage of *every* case of measles, and would base the diagnosis largely thereupon.

Zahorsky[6] found the spots in 18 out of 26 cases in private practice, but adds that unfavorable conditions as to time of observation, light, etc., may have modified the result. In private practice where opportunity for observation is necessarily restricted, it may not always be possible to demonstrate this sign, but it is certainly my opinion, based upon the foregoing experience, that in hospital or asylum work, where full control may be had of the patient, with frequent examinations, we may expect and find Koplik's spots in every case of measles.

3. *Koplik's spots are found in no disease but measles.*

Falkener[12] states that he has never found them in upward of 2,000 cases of dieeases other than measles—rubella, scarlatina, diphtheria and the like. Cohen,[11] while of the opinion that their absence does not exclude measles, concedes their presence as pathogonomonic. Zahorsky[6] has examined the mucous membrane in many cases of drug eruptions, antitoxin rashes, congental syphilis and influenzal exanthema, but the sign was never present.

Sobel[12] adds his testimony to the effect that the early diagnosis of morbilli, based upon the existence of Koplik's spots, has never failed to find corroboration in the subsequent development of the disease. The experience in this institu-

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Case.	Name.	Age Months.	Koplik's Spots First Seen.	Skin Eruption Noticed.	Interval Elapsing—Days.	Complications and Sequelæ.
1	A. L.	17	May 18	May 20	2	Broncho-pneumonia May 20; recovery May 29.
2	Kernick J.	16	May 18	May 20	2	Broncho-pneumonia May 20; died May 29.
3	Elmer	22	May 19	May 21	2	
4	Ralph H.	27	May 30	June 1	2	
5	Jeanette N.	15	May 28	May 30	2	Conjunctivitis and trachoma followed during convalescence.
6	Martha W.	15	May 29	May 31	2	Tuberculosis followed convalescence.
7	Bloyd W.	38	May 30	June 1	2	
8	Victor W.	26	May 31	June 2	2	
9	Theodore H.	6	May 17	May 18	1	Broncho-pneumonia May 21; recovery May 27.
10	Jennie R.	4	May 17	May 18	1	
11	Ruby E.	15	May 17	May 18	1	
12	Arthur F.	18	May 18	May 19	1	
13	Charles W.	16	May 21	May 22	1	Bronchitis; died of gastro-enteritis 2 months later.
14	Mary M.	33	May 29	May 30	1	Broncho-pneumonia; died June 3.
15	Edward H.	12	May 31	June 1	1	Catarrhal pneumonia; a tracheal stenosis necessitated intubation, and eventually tracheotomy; death resulted from carbonic acid poisoning.
16	Harvey M.	24	May 31	June 1	1	Typhoid fever during October.
17	Clara L.	24	May 30	May 31	1	Broncho-pneumonia; died June 9.
18	Virginia.	12	June 1	June 2	1	
19	Aura.	19	June 1	June 2	1	
20	Ida S.	36	June 1	June 2	1	
21	Leanora L.	60	June 2	June 3	1	Slow pulse and subnormal temperature for several weeks following convalescence.
22	Jerome G.	4	May 28	May 29	1	Died of marasmus the following month.

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tion has been similar; the spots, moreover, have never been found in any other disease among the babies, exanthematous or not, although carefully looked for, in all cases presenting fever and catarrhal symptoms of the respiratory or gastro-intestinal tract.

4. *The appearance and localization of Koplik's spots are constant.*

They occur most often on the mucous membrane lining of the cheek, frequently in clusters, opposite the bases of the upper or lower milk molara, or as a thin line opposite the junction of the upper and lower teeth, when the jaw is closed. Occasionally they may be found on the inner surface of the lower lip. The hard and soft palate are never the seat of these spots, and the appearance of this portion of the buccal mucous membrane is never to be confounded with them. The lesions in this locality are represented by papules and macules of a dark, and later, purplish-red color, somewhat similar to, but considerably larger than the punctate macules seen in scarlet fever.[14] The entire pharynx is, of course, congested, showing a speckled, and at times a more diffuse redness throughout. It is to be remembered, however, that Koplik's spots are found only in the locality mentioned, and also, that a pathological appearance of the mucous membrance in this vicinity becoms diagnostic of measles only with the existence of the bluish-white elevated specks.

In conclusion, let me add that, with an early diagnosis of the disease morbilli must be continued, the so-called quarantine measures to be adopted, as the factors making possible a reduction of the mortality. It is of no great advantage to order an immediate isolation of the patient from those in the household as yet unattacked, for, on account of the period of incubation, in all probability the contagion has already obtained its foothold; but it is of immense importance, especially in hospitals, institutions or larger families, that a segregation of each individual case be enforced. To separate patient from patient, and from all catarrhal or streptococcic infections, will exert a more favorable influence upon an epidemic, especially as regards the ultimate mortality from complications, sequelæ or weakened resistance, than overcrowding the infirmary or isolation ward where, if pneumonia once gains an entrance, its spread is unchecked, and a universal infection is probable. The danger of overcrowding has

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been shown time and again in epidemics of measles, occurring in military camps and asylums—perhaps with an avoidance of this evil and an earlier recognition of the disease by means of Koplik's spots—the record will be more favorable in the future.

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Spinal Curvatures—Presentation of Patients.

BY T. C. WITHERSPOON, M.D.,

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I WISH to present three patients who have spinal curvatures, typical of the three classes of flexures seen in the column. The first is a small patient, with a tubercular process now going on in the dorsal region. There is, as you can readily see, a process limited to the interspace between two of the vertebræ, or an involvment of the body of one alone. The deformity is an angular kyphosis, or better, a gibbus. This case presents the typical curvatures of a collapsing of the bodies of the vertebæ in a limited area. This is so characteristic of tuberculosis, that I need not dwell upon it further.

The next case is one of early spinal rickets. The kypho-

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sis commenced in his sixth year, and increased gradually during the next few years. The curve is a pure kyphosis. It is regular, involving the dorsal region, and telescoping the ribs into the pelvis. This is a typical curve of rickets, showing the effect of the superincumbent weight upon softening vertebæ. When a lateral curvature becomes a part of such a deformity, the child is usually older, that is, at the growing period, when the scoliosis becomes apparent. The lateral change depends upon other mechanical factors than a simple softening of the bodies of the vertebræ.

In these two cases I simply wish to show the typical tubercular and rachitic spine. They both illustrate the result of a diseased condition of the bodies, and the giving away of them upon pressure from above. In the one case it occurs at a point, in the other, throughout the entire column.

The third case is one of scoliosis in a young negro, 15 years of age, who comes to the hospital for an injury to the forearm. As you see, he is a strong, healthy-looking fellow, and on questioning him, I elicit no noteworthy history of past sickness. Here you see the typical picture of the scoliosis of adolescence. The dorsal region presents a flexure to the right and the lumbar to the left. The right scapula is elevated and on a line posterior to the left. The inner border of the scapula is very prominent, while that of the left is scarcely visible.

This depends upon torsion of the column, which is a necessary accompaniment of lateral flexure. A number of experiments upon the dead body have been performed, in which it is shown that a bending to the side produces torsion concomitantly. This is explained by the necessary mechanical relation of the vertebræ, bound, as these are, by tense ligaments. The articular processes may be considered the base of a triangular figure, while the front of the body of the vertebra is its apex. The articular processes are allowed a limited amount of movement, but in the dorsal region this is very small, on account of the ribs and their strong ligamentous attachments. In the articular zone, then, it is clear that the attachments of the vertebræ are quite broad, extending from side to side of each vertebra, while in front it is relatively narrow, represented by one ligament, the anterior common. A bending of this column of triangular-shaped bodies, in a direction parallel with their bases, all of which are at the same time bound together by strong ligaments, will cause

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torsion to take place, the apex swinging toward the convex or toward the concave side of the flexure, as the apex or end of base ligaments give the most. In the case of the vertebral columns, the base is strongly bound together across the entire lengh by the articular, the posterior common, the subflava and the inter and interspinous ligaments. The apex is held by the anterior common ligament, and between this and the base, at the side of the vertebræ, there is no ligamentous resistance. On this account the antero-lateral side will first yield under the strain.

Another factor in the mechanics of torsion is the soft intervertebral substance. This substance allows the edges of the vertebræ to approach the closer on the concave side, while the bulk of it slips to the convexity. The interspace between the base and the apex, not being so tightly held by ligaments, is the part to give. Into this territory the intervertebral substance slips and it beeomes the convex side of the curve, swinging, therefore, from an antero lateral to a lateral position. In the dorsal region, where the anterior common ligament lies to the left side, as a rule, the marked torsion appearing so clearly, is readily accounted for. These cases of scoliosis may present a double curve or a single one. As a rule, it is double, with a right dorsal and a left lumbar convexity.

Chisholm Williams records 500 cases of this trouble, 257 of which were right dorsal and left lumbar, 84 the reverse, 90 total right, and 64 total left. The remaining cases showed a triple curve. Since the direction taken by the curve is in each instance not the same, there must be some mechanical difference in the anatomic construction of the different spines, which will account for the direction taken. In this regard, I have been doing some work which, while it is at yet too limited in amount, nevertheless points a way of solution. I find the anterior common ligament is not uniformly in the center of the bodies of the vertebra, but is often to be found to one side. The commonest situation is to the left of the median line in the dorsal region veering over somewhat to the right in the lumbar. In several cases I found a difference in the amount of ligament to the left side, as compared with the right, about 3 or 4 to 1. This was in the dorsal region, where the aorta and intercostal arteries determine the development of the ligaments. The lumbar region shows very slight differences. In the dorsal region, the right intercostal

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arteries being given off to the left of the median line pass behind the vena cava, clinging closely to the bodies of the vertebræ, and preventing by pressure the same development of the ligament on the right side.

Scoliosis is observed between the ages of ten and fifteen, at that time of life when the child begins to rapidly increase stature. It is a mistake to consider every case weak and rather below the normal in health. I have at the present time several robust girls under my care for scoliosis, one in particular is very athletic and is out of doors the major part of the time, yet she presents a well-developed sigmoid curvature. Girls are affected four times as often as boys. Looking over the various pieces of literature at my disposal, which bear upon this subject, I find a unison in the chief cause to which it is attributable. Barwell says it is due to the habit of bad position while trying to write in school. Clark emphasizes the same cause. Wilson (Philadelphia), says: "Without entering upon the large subject of theoretic etiology, it may be concisely stated that idiopathic rotary-lateral curvature of the spine is produced or influenced by two factors, namely, constitutional debility or enfeebleness, and prolonged maintenance of an altered relationship normally existing between the shoulders and hips. Position in conjunction with rickets, debility, muscular irregularities, etc., is the chief factor in causing the deformity. Heredity does seem to play a part."

It does seem to me that these causes must play a secondary rôle in scoliosis. The very mechanics of the deformity demand another explanation. In the first place, position might give rise to a bending of the lumbar area, but it could not well influence the dorsal to the extent observed. Then, too, the dorsal area is the very first to show the deformity. Faulty position is always accompanied by a forward bending and would lead to a kyphosis with scoliosis. Kyphosis is not observed in the typical scoliosis of adolescents, but rather, a tendency to lordosis. Again, a curvature from position requires the consideration of the superimposed weight of the head and upper extremities, and a giving away on the body side of the vertebra. This would cause the same deformity seen in early rickets, namely, a kyphosis, and, therefore, every scoliosis from this cause would be one of kypho-scoliosis. The lordosis, seen especially in the lumbar, can only be accounted for by an increase in the length of the column in

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which the bodies of the vertebra and intervertebral substance grow more rapidly than the posterior or base ligaments. Otherwise lordosis is impossible.

In contemplating the changes which characterize this affection, no reasonable explanation, it seems to me, can be offered in either of the two general classes of causes which I referred to as coming from men who are to be regarded as authorities, namely, position and weakness. From a mechanical point of view, an explanation is better found in those changes, which are almost the reverse of these, namely, rapid growth and the development of unequal pressure within the bony-intervertebral substance column itself. An unequal growth between the ligaments and the column would lead to those changes which characterize this trouble. The increased tension in the column would find relief by a displacement of the soft intervertebral substance in an antero-lateral direction with the curves resulting. The more closely-bound dorsal region would be the first region to indicate the presence of such a condition. The looser cervical and lumbar regions would be the last to show the change, and at all times would show less. The greater the weight from above, the more marked the curvature, because of the relatively increased tension in the column, therefore, the lumbar shows more curvature on standing than the cervical vertebra. The rotation of the pelvis is but the same thing seen higher up in the column, that is, a torsion seen in the lower end of the column continuous with that which occurs throughout the entire lot of vertebræ. I am sorry I can not present some findings of a post-mortem kind to substantiate that which I here have offered, but in the near future I promise this proof. The direction taken by the curve would be influenced by the position of the anterior common ligament, and, as far as I have been able to discover, the post-mortem findings bear a direct relationship to the statistics in this regard.

As to treament, I would suggest using the lever power of the ribs. If the convex posterior side, which is usually the right in the dorsal, be bound down by adhesive straps encircling the half of the chest, the left ribs alone become active in respiration. The ribs act as levers of the first class, in which the bodies of the vertebræ are loads, the transverse processes are fulcrums, and the respiratory muscles are the motive means. The ribs of either side acting alone, tend to curve the

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column to that side. Respiratory exercises, while lying on the back, are very advantageous, as is also leg and arm movements. I am able to obtain much more rapid improvement in this deformity by strapping the convex side of the chest than by any other means at my command. Let me recommend it.

A Case of Iodoform Poisoning.

BY CHARLES H. DIXON, M.D,

ST. LOUIS, MO.

MRS. S., aged 20 years, in March, 1900, was septic from an osteomyelitis of the right tibia; a year before she had been treated for an arthritis of the right knee, which at the time was thought to be tubercular. About six weeks or two months before I saw her, she was operated on for some growth in the joint, and a short time after this the joint became septic. She ran a high temperature and had intense pain, so severe that she was kept constantly under the influence of opiates, taking three-quarter grain of morphine, hypodermically, several times a day. The heart and lungs were normal; the urine was normal as regards frequency, amount and ingredients. She was of a decidedly nervous temperament.

On March 7th, she was operated on and a large part of the shaft of the tibia removed, leaving above only the articular surface and the outer shell of the upper two-thirds of the bone; it was dressed and next day the temperature dropped to near normal, and morphine was rapidly diminished, although she craved the drug continually. On March 14th, the dressing was changed from a bichloride gauze to one of gauze moistened in a 10 per cent iodoform and glycerine emulsion and packed into the cavity. Three days later, when the dressing was changed, she was exceedingly nervous, calling for morphine incessantly and imagining that she saw objects on the ceiling. Her temperature was not over 99.5°F. No chills or sweating,

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tongue moist, pulse quick and weak. The wound was dressed as before and about a dram of the emulsion poured over the gauze after it was packed into the cavity. The following day the condition of her mind was worse; she became almost wild, force being required to keep her in bed, she was raving constantly, at times there was a low muttering delirium. Her urine was now scanty and high-colored, while just before she was passing a normal quantity; it showed epithelial casts, albumin and iodine, but no blood. The dressings were changed immediately, the parts thoroughly cleansed of all particles of iodoform, and bichloride gauze substituted. The condition began to improve at once, and in a few days all symptoms had disappeared.

The iodoform used in this emulsion was the crystallized and not the powdered.

I have seen several cases of iodoform poisoning and all occurred when the emulsion had been used, with one exception, and in that case the powder had been rubbed into the surface.

Preventive Inoculations of Typhoid.—According to the *Medical News*, in a recent discussion at the Medical Society of London, Dr. Washbourn reported that the mortality of typhoid fever in South Africa was 10 7 per cent in those who had received no inoculation, and 16 per cent in 25 cases who had been inoculated. After comparing the statistics from various sources he concludes that the inoculations have little value in preventing a fatal issue.

With regard to incidence, they found that among 224 persons inoculated, the proportion attacked was 11.4 per cent, and among 157 not inoculated it was 14.6 per cent; the conclusion was that typhoid inoculations were of no practical value in preventing the disease.

This conclusion is a strong blow to the hopes of military surgeons, for it is not very long since a sure method of preventing this disease in army camps seemed certainly in our possession.

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LEADING ARTICLES.

DIAGNOSIS BY EXCLUSION.

In actual practice the method of diagnosis by exclusion may be said to be one of the most frequently employed means of analyzing disease. It commends itself because it is rapid; does not, as a rule, require a long investigation of the clinical phenomena, and, for the first few visits, gives fairly accurate results. Some physicians become very expert in this method, and will astonish the more learned confrere, who laboriously seeks all the facts necessary to complete a clinical picture.

Let us give some examples:

A man enters the office and states that he has been suffering from pains in the stomach for several months; that the pain comes on particularly after meals; that he feels tired and is losing flesh, and that he is a very nervous individual. The physician looks at his tongue and palpates the epigastrium, more for the formality of doing something, than for discovering anything; he excludes cancer on account of the patient's age, excludes ulcer on account of his sex, diagnosticates the case as nervous dyspepsia, and treats the patient accordingly.

A woman 45 years of age presents herself, and exhibits a swelling in the breast. Abscess of the breast is excluded by the absence of fluctuation; tuberculosis, on account of its rarity, and adenoma, on account of the patient's age. A diagnosis of cancer is made, and the breast is amputated.

A child is brought to the physician suffering from marked febrile movement. Typhoid fever is excluded on account of the acute onset; pneumonia, on account of the absence of thoracic symptoms and signs; tonsillitis, on account of the absence of throat symptoms; the exanthemata, on account of the non-existence of a rash; therefore, the disease is malaria, and quinine is ordered.

A man complains of great pain in his back. The urine is examined for albumen, but none is found; nephritis is excluded. No weakness of the limbs exist, and this excludes myelitis; the absence

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of local tenderness excludes abscess; therefore, the disease is lumbago.

These examples might be multiplied indefinitely, but they will suffice to illustrate the point made, that the busy, and also the indolent physician can make a diagnosis in a few minutes, which may satisfy his own mind and that of the patient, and in the great majority of cases he will be correct; or, it may not be necessary for him to be correct, in order to treat the patient successfully.

Yet, this method has a great many imperfections, and, from a scientific standpoint, it is not to be commended. It can never form the basis for the investigator, and only imperfectly for the teacher. With many physicians it may be necessary to make a great number of diagnoses daily, but it may not be necessary that they be correct at the first visit. On subsequent visits, when it is ascertained that the treatment is unavailing or that the course of the affection does not satisfy our diagnosis, another tentative diagnosis is made.

But the scientific physician should never be content with this method. He must search for all the disease phenomena, even when it takes many days of work, microscopical, chemical, or bacteriological examinations, and a prolonged and careful inquiry in the activity of all the organs.

In is interesting to examine into the reasons which are usually given to exclude or assert the presence of a disease. First, the known frequency or rarity of the affection is probably most often employed. Cancer is excluded in the young because of its rarity; influenza is often diagnosticated because it is epidemic at the time. Cyanosis of the newly-born most frequently means a narrowed pulmonary orifice, and this is the usual diagnosis. Aortic regurgitation is most frequent in the old, therefore, a given disorder of the heart in an old man is thus designated.

Another ground on which an exclusion is based is the absence of an essential or common symptom or sign. Thus, typhoid is excluded because a given fever commenced suddenly; sarcoma is not considered because a given tumor grew very slowly; malaria, because there is no remission of the symptoms; pneumonia, because there is no consolidation of the lungs. But as we know that few diseases have characteristic symptoms, this ground, however useful, is very imperfect.

Another reason is because a certain disease is acute or chronic.

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Thus an affection of the lung is either phthisis or pneumonia, according to the length of time it has existed. An acute pain in the hip is pronounced rheumatic, but if it has persisted more or less for several months, the physician seeks for evidences of tuberculous disease.

But there are many signs which may not even have found there way into the text books, and which are more or less positively used by clinicians to exclude a given disease A rather rapid pulse may induce some to speak against a given disease being typhoid; a peculiar aspect of the countenance may exclude pneumonia, a peculiar odor may exclude measles, and a dry mouth may serve to exclude a gastritis.

We must repeat that this method has so many imperfections that it should be used only to make a provisional diagnosis, which should then be corroborated by a thorough investigation.

THE DOSE OF ANTIDIPHTHERITIC SERUM.

There is, as yet, considerable difference of opinion among clinictians as to the proper dose of diphtheria antitoxin. One thousand units probably is the average initial dose usually administered; still, others recommend as high as three thousand units in cases of moderate severity. McCollom has used enormous doses (40,000 units in a few days), with apparent benefit. It is inconceivable that the human organism can contain an amount of diphtheria toxin to require such large quantity of the antidote. The object of the antitoxin is to neutralize all the toxin which is circulating in the blood and still leave a sufficient excess to destroy all the toxin which may enter the blood during the time that the local infection is overcome. Necessarily, in cases that show some evidence of local infection for many days, the dose must be large and frequently repeated.

But in the vast majority of cases in the first two or three days of the disease, one initial dose, sufficient to destroy all toxin in the blood, or that may enter for a few days, is all that is required. Usually, however, a much larger quantity is injected.

If we remember that one unit neutralizes one hundred times the fatal dose of toxin in a guinea-pig, and assuming that the susceptibility of the human organism is about the same, it is obvious that a child weighing fifty pounds, injected with one thousand units, receives

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enough antitoxin to neutralize at least one thousand times the fatal dose of antitoxin. Why should this excessive dose be given?

In the first place, the human susceptibility to the toxin, as compared with the guinea-pig, is unknown; probably it is much greater, at least, such must be assumed in practice. Then, again, the test is made with a definite dose, which is injected at once, while the toxin in the infected individual gradually enters the circulation; meanwhile, some of the antitoxin may be excreted. How long a dose remains in the system is as yet only approximately known; some may be excreted at once, yet the process of excretion is gradual, as is known from experiments in immunizing.

Another allowance must be made for a certain quantity which may be destroyed by internal, synthetic or analytic processes. This, of course, is purely speculative, but in actual practice must be considered. When eliminatives are administered, such as purgatives, diuretics, sialagoges, diaphoretics, etc., an additional quantity must be allowed for a possible loss through the emunctories.

Clinicians are compelled to make another allowance, and that is the possible deterioration of the serum through age. Frequently the serum is found far below the strength marked on the vial.

Theoretically, therefore, a much smaller dose should suffice, but practically one to five thousand units must be given. As a rule, a sufficiently large dose should be given at the first injection, it will then not have to be repeated. A second injection is not necessary, and should not be necessary, if the initial dose is not too small.

THE PATHOLOGY OF HODGKIN'S DISEASE,

The pathology of pseudoleukemia is still obscure. Yet gradually the pathologist is separating a large number of affections characterized by enlargement of the lymphatic nodes, which are usually diagnosticated pseudoleukemia, and which are demonstrated to be tuberculous, cancerous and sarcomatous. A general syphilitic adenitis is by no means rare.

When all of these have been separated, according to Osler and others, a distinct and true affection, having a pathology of its own, and known as Hodgkin's disease, remains in the classification of disease.

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Sternberg first described certain cases which, clinically and anatomically, resembled true Hodgkin's disease, but which proved to be tuberculous by inoculation experiments. This affection is now known as Sternberg's disease. Some observers have recently passed the statement that Hodgkin's disease, in most cases, is a general lymphatic tuberculosis. Indeed, some have gone so far as to assert that pseudoleukemia is always tuberculosis, and it is for those who hold that Hodgkin's disease is a separate affection to prove it.

On the other hand, the theory that the true cases are sarcomatoses, lacks definite proof; although, it is true, not much can be said against it.

The theory that this disease is really a lymphatic leukemia, in which the lymphcocytes are not liberated but held in the nodes, is very attractive. Benda has written on this subject, and has demonstrated certain changes in the blood-vessels in leukemia, which permit the entrance of the corpuscles into the circulation. These vascular changes are said not to occur in Hodgkin's disease; but no explanation has been offered, why no vascular changes occur in this disease. The difficulty is, therefore, only removed farther back, and should not imply that the two diseases depend on the same etiological factors, even if the changes in the organs are similar in the two diseases.

In view of all these uncertainties, a clinical study of such a case offers great difficulties. Before making a diagnosis, tuberculosis must be excluded, a gland should be removed, and portions of it inoculated in animals, the tuberculin reaction should be tried; the therapeutic test for syphilis must be used if suspicious signs are present in the history.

When these are excluded, the presence of a general lymphosarcomatosis or carcinosis is still to be considered. The exclusion is by no means easy; we recall two mistakes of this kind.

Finally, a rare disease, which resembles leukemia, except that the lymphocytes do not reach the circulation, remains to be studied. But the proof of the existence of this disease is still uncertain, and when we recall that Hodgkin's disease is most frequently accompanied by a remittent and irregular fever, we can not prevent a feeling that an attempt to prove this other than a chronic infectious disease, has as yet little foundation.

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THE COMPLEXITY OF BIOLOGIC PROCESSES.

It has often been taught that nature's methods are simple, and this teaching has had a wide influence. No sooner is a new physiologic phenomenon discovered than some student offers an explanation in the simplest form, based on physical laws. But these explanations are temporary only; additional studies make them untenable, or, at least, modify them to a great extent. The more extensive the studies, the more complex appears any given vital process.

Such has been the fate of the Darwinian theory of Natural Selection. This law was hailed with delight as being a simple and conclusive explanation of the origin of species, and, in fact, of the genesis of all physiologic phenomena. But continued studies by naturalists has modified and amplified this law until to-day under the name of neo-darwinism, neo-lamarkism, monism, etc., the theory offers a complexity that baffles the minds of the most intellectual scientist.

In the progress of physiology and pathology in the last twenty years, several examples of this fallacy may be recalled. The process of digestion and absorption was placed on a purely physio-chemical basis, and for many years the chemical activity of certain ferments and the process of osmosis were considered as perfectly adequate to perform all necessary functions in digestion. Now it is known that this process is far more complex; the gastric and intestinal epithelium have an specific and selective action on the absorption of food, and also determine, in a great measure, the character of digestive fluid required; for, according to the experiments of Nencki and others, the composition of the pancreatic juice varies with the kind of food ingested. The summation of our knowledge on this subject adds enormously to its complexity.

Still more striking is the gradual development from the simple to the complex in the theory of immunity. It will be recalled, that soon after the discovery of micro-organisms as disease-producing, a search into the healing qualities of the human body was instituted. The earliest researches were made along the line indicated by discoveries in practical surgery. It was discovered that certain chemicals have the power to destroy bacteria, and that these chemicals could be used to cleanse wounds of any infectious material. The hypothesis was laid down that the human body contains a certain substance that can destroy minute organisms.

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Buchner, Niessen, and others found that blood serum has a direct germicidal power, which the former attributed to the proportion of salts which it contains. Some were inclined to favor the alkalinity of the blood as the antiseptic agency. Then it was discovered that the globulins had the power to destroy vegetable cells, and it was believed that the normal antiseptic power of the blood resides in its globulins. Vaughan, maintained after an extensive study of this subject, that the protective influence of the blood lies in the presence of nuclein.

With the extension of these researches, it soon became apparent that artificial and acquired immunity depends on very complex processes. The discovery of agglutinins, alexins, antitoxins, cytolysins, etc, with the theories that were offered to explain their action, rendered this subject so complex that only the specialist can entirely follow its various phases.

It is but natural to conclude, therefore, that the various processes engaged in the preservation of life are by no means simple, and modern investigation offers little hope that a solution of these problems is in sight.

EDITORIAL COMMENT.

Recent Advances in Surgery.

While, on the one hand, there is a disposition of some conservative surgeons to oppose the indiscriminate operative interference in diseases, which are universally conceded to be entirely surgical; on the other, surgeons are boldly invading the field which has been generally assigned to internal medicine. The most notable instances of this are the surgical treatment of hepatic and renal sclerosis. Both of the affections have been considered hopeless. The increase in the fibrous tissue in cirrhosis of the liver and in interstitial nephritis has resisted all internal medication, and, until recently, surgical measures have not even been suggested. Now these conditions may be said to have received a new prognostic importance since the introduction of surgical procedures.

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The operations in both cases are based on the principle, that the danger is from obstruction to the circulation due to the increasing fibrosis. In order to relieve this condition, new blood-vessels must be supplied, and in the case of hepatic cirrhosis the portal vein must have another outlet. Surgery promises to fulfill both of these demands. An anastomosis of the portal vein with other vessels has been done and an increase of blood supplied through the capsule, by attaching the liver to the surrounding structures.

In the case of chronic Bright's disease, Edebohls recommends nephropexy, and reports several cases, in which a cure followed this operation. In his first cases, nephropexy was undertaken without any idea of influencing an existing chronic nephritis; but having noticed that the albuminuria and renal symptoms disappeared, and that this improvement was permanent, he was encouraged to test the operation on typical cases of Bright's disease. He claims to have demonstrated that this disease may be cured by operation.

The good results are explained by the fact that the capsule of the kidney is partially stripped in the operation, and the kidney anchored. Through this denuded surface, a healthy arterial circulation is established. The kidney is thus nourished from the cortex, and not through the pelvis. The reparative process then progresses unhampered.

The Expectant Treatment.

Several articles have appeared in recent literature on the subject of expectant treatment. It should be remembered that this term is very confusing, and may mean several different forms of treatment. as viewed by as many different practitioners. To some it means, putting the patient to bed and do nothing else to retard his recovery which nature will hasten best without interference. Another meaning is, that ordinary hygienic and dietetic measures should be instituted, but no drugs given. A third explanation seems to be, that drugs should be given only when a definite indication for their use is present.

There is a great cry at present that too many drugs are given, and some are advocating the expectant treatment. From some of these papers the inference is rational that it is best to do nothing for the patient, and that the medical profession is not only useless, but actually harmful.

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It does seem necessary that some uniformity of opinion might arise as to what is really expectant treatment. Meanwhile, each practitioner will continue to use remedial measures which he knows, or believes to have a favorable influence on the course of the disease.

The Establishment of a State Sanatorium in Missouri for Tuberculous Patients.

The Medical Society of City Hospital Alumni, of St. Louis, at a recent meeting adopted resolutions, the purport of which is, that this society shall at once, by correspondence and otherwise, seek to enlist the co operation of other medical societies and bodies, and of all the public press throughout Missouri to the end that a sanatorium, commensurate with the importance of the object sought, be authorized by legislative action, the same to be erected in some suitable location in the mountainous part of the State.

This is reallv the most important and most effective means in the fight of tuberculosis, and it is generally acknowledged that each State should possess such sanatorium. The several States (New York, Massachusetts, etc.) which have this means of protecting the public from tuberculosis, are meeting with a success in the treatment of the disease, which was hardly expected. The State should be among the first to establish such institution. The Ozarks furnish ideal regions for the treatment of consumptives by pure air. A sanatorium erected in some these places would not only be of vast benefit to the State, but attain more than the average in its percentage of cures.

We urge all physicians throughout the State to take up this subject, and get their representative interested in the project.

Lymphadenoma.—At a recent meeting of the London Pathological Society (*Medical Record*) it was pointed out in an interesting discussion on this subject, that great confusion exists as to nomenclature, one surgeon designating a case lymphoma, another called it lymphosarcoma, and a third lymphadenoma. It was denied that there was any hypertrophy of lymphoid tissue in these cases, but the growths presented a definite structure, and were not due to the tubercle bacillus, although this infection may supervene on the growth.

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DIAGNOSTICS.

The Diagnosis of Ulcero-Membranous Angina,

The clinical appearance of this affection is a punched-out ulcer on the tonsils of children. It may, in the beginning, be covered with a thin pseudo membrane, and somewhat resemble diphtheria; but the constitutional symptoms are light, the symptoms being entirely local. The submaxillary glands are usually enlarged, but not tender. As a rule, only one tonsil is affected; and there is no tendency to invade the neighboring structures. Nevertheless, the diagnosis must entirely depend on a microscopical examination of the secretion from the ulcer. With a swab some of the secretion is obtained from the ulcer and spread on a cover-glass, and fixed in the usual way. It is then stained with a dilute solution Ziehl's carbol-fuchsin (one part of the fuchsin solution to three parts of water). It will be noticed that the principal bacterium present is a fusiform bacillus, about twice the length of the diphtheria bacillus. Associated with this is a spirillum, which is large, and resembles the cork-screw. These micro-organisms can not be cultivated in pure colonies on the ordinary media; hence, a microscopical examination of the sputum is the limit of our investigations.

Arthritis Deformans of the Hip.

Becher claims that two valuable signs are very characteristic of the early diagnosis of arthritis deformans affecting the hip joint. These are: Limited abduction of the thigh of the diseased side; and the pain in the affected joint is increased by rest, is and diminished by exercise.

Bulimia.

A great craving for food after the anorexia in acute infectious diseases is purely physiological. After typhoid fever, as is well known, the patient has an enormous appetite, and for many weeks will eat much more than normal. The same is true, although in a less degree, after pneumonia, malarial fever, diarrhea, and other acute diseases. Excessive craving for food follows naturally after disorders of the stomach, on account of which all the food is vomited. This may

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occur in ulcer of the stomach, and occasionally in chronic gastric catarrh. It is common in infants with chronic indigestion or pertussis; the infant vomits large quantities, and then cries for more. In its severest form this occurs in the spastic conditions of the pylorus, when the food can not enter the duodenum in sufficient quantities. In infants it is also found in certain forms of diarrhea and intestinal indigestion. The infant is ravenous, sucks its hands, and often takes two or three times the normal quantity of food at a time. Very much the same way are infants that are fed on very dilute milk mixtures. In diabetes mellitus a large appetite is very common, and often is the first symptom to suggest the disease.

In many nervous diseases this symptom is very prominent. Certain forms of insanity and idiocy show this symptom. It is said that epileptics may at times have a ravenous appetite; the same may be said of cerebral tumors and chronic meningitis. It has been noted in exophthalmic goitre. In its most peculiar forms it is met in hysterical persons. In these cases it may be associated with a loss of sense of satiety, or a craving for all sorts of unusual and even disgusting substances.

Repeated Attacks of Vomiting Due to Floating Liver.

A lad, 20 years of age, came to Areilza with the history that every two or three months he had attacks, commencing with a cold all over the body, and followed by pain, vomiting, great prostration, and unconsciousness. A tumor was found in the right hypochondrium, which at first was thought to be hydatids of the liver, but on operating it was discovered that the liver was floating. The liver was fixed to the abdominal wall, and the peculiar attacks did not recur after recovery from the operation.

Pyrexia in Cancer.

Fever is pre-eminently a sign of an infectious disease. Its occurrence has been demonstrated even in the early stages of syphilis. On the other hand, an elevation of temperature, with the exception of insolation, is rarely present in affections which are not due to microorganisms. Fever is common also in cancer, according to Woehnert (*New York State Journal of Medicine*). This is especially true of cancer of the internal organs. Osler has found this symptom present in about one-half of the cases. The elevation varies from a few

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tenths to five degrees. Its presence can not be entirely explained by ulceration or metastasis. Altogether it must be taken as corroborative evidence, that cancer belongs to the infectious processes.

To Differentiate an Idiopathic Dilatation and Diverticulum of the Esophagus.

For this purpose Zweig (*Deutsche Medizinische Wochenschrift*, August 15, 1901) recommends that two gastric sounds be passed, one into the stomach, the other to the obstruction in the esophagus. A small quantity of methylene solution is then poured into the latter into the dilated gullet. The former tube is now slowly withdrawn; if there is dilatation, the blue solution will flow from this stomach tube during the extraction; but in the case of a diverticulum, no fluid will appear. This is a simple and reliable test.

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Courvoisier's Law.

Cabot (*St. Paul Medical Journal*, December, 1901) calls attention to the fact that most text-books give enlargement of the gall-bladder as a sign of obstruction of the common bile duct; yet, this is erroneous, as a rule. Courvoisier, in 1890, after analyzing a large number of cases of diseases of the biliary tract found that, contrary to the usual belief, the gall-bladder is only exceptionally distended in obstruction of the common duct by a stone. He, therefore, gave expression to a law which now goes by his name: When the common bile duct is obstructed by a stone, dilatation of the gall bladder is rare; when the common duct is obstructed by other causes, dilatation of the gall bladder is common.

This law has been confirmed by others. In his own cases, Cabot finds that this law was violated only twice in 57 instances. It seems, therefore, that this law must be considered as demonstrated.

This remarkable phenomenon is explained by the fact that in gall-stone the bladder is diseased and thickened, and the stone rarely completely occludes the duct.

As the common duct, excepting gall-stones, is most commonly obstructed by cancer, this law becomes at once valuable from a diagnostic standpoint. Jaundice, with marked enlargement of the gall-bladder, would point to malignant disease; while jaundice, without enlargement of the bladder, indicates the presence of a calculus.

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THERAPEUTICS.

In Charge of
W. L. JOHNSON, M.D., and A. LEVY, M.D.

Milk or Whey in Enteric Fever.

Selby (*London Lancet*, November 2, 1901) advocates whey in the treatment of typhoid fever. Milk is not an appropriate food because (1) it forms hard cheesy curds in the stomach, and these curds passing along the intestines give pain, scraping the raw ulcers; (2) it involves gas, causing perpetual distension of the bowels; (3) the bacillus typhosus breeds rapidly in milk.

The result of using whey has been a diminution of death rate from 15.5 to 2.7 per cent. A little tea, coffee, or cream may be added. For children, a little cochineal to color it pink. The quantity given varies from a pint and a half to six pints daily. Beef tea is occasionally added.

The most marked beneficial effects were shown by a clean mouth and tongue. The pulse rate diminishes encouragingly. Sweet whey, white of egg, and broth is the diet at Cork Street Fever Hospital, Dublin, and in fifteen years their death rate stands 7.5 per cent. Alcohol was given by Selby in most cases—pushed when the cardiac first sound was weak. He does not use baths, but has the patient sponged, and put under ice cradle for temperatures going higher than 103 or 104°F.

Conservative Treatment of Appendicitis.

In spite of the mad denunciations of other than immediate operative procedures by some of our leading surgeons, there are practitioners who remain unmoved and unanswering in their fidelity to the "conservative" treatment of appendicitis; thus, Wise (*Cleveland Medical Gazette*, November, 1901), while not wishing to minimize the triumphs of surgery in this disease, maintains that it is high time to draw the line on such an attitude as gives voice to the sentiment that medical treatment is simply "high-grade Christian science," and quotes Prof. Broca, of the Paris Hospital, who admits that, since adopting the waiting plan and not operating, as before, in every early cases, that he

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loses only one-third as many cases as formerly. Dr. Wise strongly defends the opium treatment, and of the objection to securing the symptoms, says: "We might, with equal propriety, prohibit the fire department from throwing water on fires, because the steam (?) arising therefrom obscured the flames." To opium he ascribes a positive antiphlogistic action, and believes nothing so conserves the patient's energy and vitality as relief from the abdominal pain. Mitchell (*Therapéutic Gazette*, November, 1901) considers rest of mind and body the first requisite, and then diet. For the first twenty-four hours nothing should be given by the mouth. Later, when the stomach and intestines have been cleansed (after small doses of calomel, followed by salts, if necessary, by rectum), peptonized milk and gruel, panopeptone, eggnog, and other light liquid foods and plenty of water are given. If pain is severe, hot applications and morphine are resorted to; but with each hypodermic morphine give a grain of calomel, *per os.* He believes that we are never justified in advising an operation while the appendix is inflamed, just to prevent a complication. Cathartics should be avoided in acute appendicitis, according to Robinson (*American Journal of Surgery and Gynecology*, April, 1901), but cold, as tube coils, or hot corn meal poultices, used locally, grain $^1/_{16}$ morphine sulphate every three hours, injections of water into the rectum, and feeding by the rectum. Complete anatomic and physiologic rest is insisted upon, the patient should not rise to urinate or defecate.

Veratrum Viride in Pneumonia.

In the last issue we reviewed several articles on pneumonia, one of which advocated in early and selected cases this drug. Stephens (*Therapeutic Gazette*, November, 1901) gives some formulæ for its use in this disease, one as follows:

℞ Tinct. veratri viridis (Norwood's)..... fℨj
Vini ipecac vel sprt. etheris nitrosi..... fℨij

M. Sig.—Give every three hours in a little water, commencing with ten drops and increasing one or two drops each dose.

We think this dose too large in the majority of cases, and believe that one or two drops of Norwood's tincture every one-half hour for four doses, or until moisture appears and pulse reduced, add then one or two drops every three hours, quite sufficient, and this must be withdrawn after the congestive symptoms are relieved.

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Coal Tar Antipyretics in Children.

McGee (*Cleveland Medical Gazette*, November, 1901) believes that there is frequently no need of reducing fevers in children, but when he does use an antipyretic of this group his preference is for phenacetin, one to three grains for a child two to five years old. Hare considers antipyrin safest. In whooping-cough, antipyrin is much employed, lessening the number and severity of the paroxysms. The dose suggested is two to three grains daily, for each year of the child's age. In influenza, phenacetin is useful in children as in adults, more for its sedative than for its antipyretic effect.

Timely Prescriptions.

For post-grippal cervico-occipital neuralgia:

℞ Quinin muriat..... gr. ij to v
Strychnia sulphat..... gr. $^1/_{40}$ to $^1/_{30}$
Ac. arsenosi..... gr. $^1/_{40}$ to $^1/_{30}$

M. Ft. cap. j. Sig.—One four times daily, with fly blister to nape of neck.

For post-grippal nervous depression:

℞ Strychnia sulph..... gr. $^1/_{60}$ to $^1/_{30}$
Syr. hyphosphites (Churchhill's formula)..... ʒj to ʒij

M. Sig.—Teaspoonful after meals.

For post-grippal hypochondriasis:

℞ Gel. coated pil. asafetida..... gr. iij to v

Sig.—One after meals and at night.

For insomnia, following grip:

℞ Tinct. digitalis..... ♏ vijss
Chloralis hydratis..... gr. x
Syr. tolutani..... fʒj

M. Sig.—One such dose, well diluted, at night.

Hysteria, augmented by grip:

℞ Elix. ammon. valerianat..... ..
Elix. potassium bromide.....*aa* ʒj

Sig.—One such dose, well diluted, every two to four hours until effect.

Otalgia (inflammatory):

℞ Ichthyol..... gtt xx to ʒj
Glycerin..... ʒj
Aqua Rosæ..... ʒj

M. Sig.—Instil a few drops (warmed) into auditory canal.

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Otalgia (neuralgic):

℞ Camphor.....
Menthol.....
Chloral..... ....*aa* gr. x
Ol. ricini..... ℥ij

M. Sig.—Apply on cotton to ear drum.

Trigeminal neuralgia:

℞ Croton-chloral..... gr. iij to v

In syrup tolu or as pill, with glycerite of tragacanth, every half hour until relieved.

For the catarrhs, glandular enlargements, or for deficiency of bile and the intestinal secretions, sometimes seen after grip:

℞ Tab. hydrastine (white alkaloid)..... gr. $^1/_8$

Sig —One or two tablets after meals; or twenty to thirty drops of a reliable fluid extract of hydrastis.

Rheumatism:

℞ Ammonii salicylat..... gr. x to xv
Aqua Gaultheriæ..... ℥j

M. Sig.—One such dose, diluted, four or five times daily.

℞ Methyl salicylat..... ℥j
Ichthyol..... ℥j
Vaselin..... ℥j

M. Ft. ung. Sig.—Rub in locally and cover.

Bronchial asthma:

℞ Syr. acidi hydriodici..... ℥j to ℥iv

Sig.—One such dose, well diluted, three or four times daily.

Or:

℞ Potasii vel. sodii iodid..... gr. x

Well diluted, four times daily.

During paroxym, dyspnea, give:

℞ Spts. etheris comp..... ℥ss
Morph. sulph..... gr. $^1/_8$
Aqua..... qs. ad. ℥j

M. Sig.—This dose every hour, if necessary, for several doses.

Or;

℞ Nitroglycerin..... gr. $^1/_{200}$ to $^1/_{50}$

Repeated.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of October 3, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

Specimen of Mammary Tumor.

Dr. Francis Reder presented this specimen. It was taken from a woman about 37 years of age, who had always enjoyed good health and looked the picture of perfect womanhood at the time of operation. The history she gave was, that about three months ago she noticed a nodule, not painful; she did not mention it to her husband and hoped it would pass away, but she felt somewhat alarmed. About four weeks later she noticed a sharp pain radiating from the right breast up into the neck; she then mentioned the matter to her husband, who asked her to consult a physician. I was called to see her, I examined the breast and found the conture normal, but in the axillary segment I found a nodule. The woman weighed about 165 pounds and the tumor was about the size of a walnut. I thought I felt fluctuation but on account of the amount of adipose tissue I could not be sure of that, I told the patient what I thought the growth might be; I was judging from the fact that 9 or 10 per cent of such growths are suspicious, though I did not mention this to the patient. She was given iodide of soda, but the pain rapidly grew worse and at the expiration of a week I was satisfied that the breast ought to be removed. I conversed with her in a way to alleviate her anguish, but she did not then give her consent to the operation. Two weeks later, however, she consented, and the operation was performed. The breast was removed, and the axillary space thoroughly cleared of all glands and adipose tissue. After amputating the breast and looking at it closely I thought I might possibly have erred in my diagnosis. When it was incised a grayish liquid ran out and a cyst was revealed which looked like a multilocular cyst It was submitted to a microscopical examin-

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ation, and the physician who examined it wrote to me two days later, saying he hoped I had performed a radical operation, as the condition was found to be cancerous. The seat of the growth was in the upper part of the outer quadrant of the breast, which is a favorable seat for carcinoma of the breast.

There are two kinds of carcinoma with which we have to deal in this region: Carcinoma fibrosa, or scirrhus, and the medullary, or encephaloid carcinoma. It can readily be seen that the growth here belongs to the medullary type because the fibroid condition is altogether wanting. In the scirrhous form it is rare to find the whole breast involved. There has been no adherence of the skin in this case to the growth nor has the nipple retracted to the growth.

The wound healed by primary union, and two weeks after the operation the patient was able to leave the hospital.

During the preantiseptic era the mortality from breast amputation was as large as from amputation of limbs; the mortality has now been greatly reduced. The matter of recurrences may be due to the physician who has charge of the case, or to the patient herself who will not give her consent to an operation in time to prevent recurrence. Halstead has gathered some interesting statistics, probably the least number of recurrences were in those cases where extreme radical operations were performed. He had gone so far as to remove nearly all of the pectoralis major and the fascia of the pectoralis minor, and, in severe cases, severed the clavicle. His dissections are very clean and smooth. In one operation I saw, the veins had been stripped for about two inches, and in one case he went so far as to expose the axillary artery, something that is not often done.

During the last five years I have removed about twenty cancerous breasts. Of these, four died from acute diseases; two have had recurrences, and one woman operated on three years ago shows suspicious signs internally, yet I can not find any induration about the cicatrix. Another case came under my observation after an operation by another physician. Three months after the operation a tumor formed in the axillary space and under the scapula, and it was then she first consulted me. I told her there was nothing to do but institute treatment, using the toxin of erysipelas, and this did furnish some relief of pain, but she died of exhaustion. The other cases, the last of which was seen a year and a half ago, I think are in good health.

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DR. C. H. DIXON read a paper (see page 37, this issue) on

Iodoform Poisoning.

DISCUSSION.

DR. REDER thought iodoform unquestionably a dangerous drug when applied to large surfaces. During his term of service in the City Hospital, iodoform was used in quantity. After amputations it was applied to the stump and dusted on and rubbed in until there was a regular paste formed. In a number of cases the patients had delirium and afterwards died, death being attributed to shock, though occurring sometimes from three to six days after the operation. Since the toxic effects of the drug have become more thoroughly understood it can be readily seen that iodoform poisoning was probably the cause of death in these cases. The most characteristic symptom of iodoform poisoning, he thought, was the tongue; this organ becomes dry and a peculiar discoloration appears on its surface, this is followed by nervousness and delirium.

DR. GREENFIELD SLUDER mentioned a case following operation. Laparotomy had been performed and the result seemed successful; a little later there was an erysipelatous blush, followed by wild delirium and death, which was atrributed at that time to iodoform poisoning. It was not an uncommon thing during his term in the City Hospital to see more or less disturbance following the use of iodoform. It was rubbed into the wound, dusted on the surface and used on a pack. Oftentimes it was used with the idea of closing the wound next day by aseptic granulation. Such manifestations as iodoform eczema were of almost daily occurrence. In the past two years he had used a good deal of iodoform in the nose, and it is a habit now to dress all wounds with iodoform, though patients will sometimes object. He always uses it at the time of operation, if not afterwards; it forms an insoluble coat and remains in the granulation tissue until healing takes place. He had one case during this time which he thought showed some symptoms of iodoform poisoning; there was an eczema, a high degree of swelling, redness and some temperature. All these symptoms subsided on discontinuing the use of the iodoform.

DR. J. C. MORFIT mentioned a peculiar case of iodoform poisoning. It was different from the case described by the essayist, as the form of iodoform used was a 10 per cent iodoform gauze used as a

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pack; the pack was used following a vaginal hysterectomy for adeno-carcinoma. The patient showed symptoms of restlessness, but the most prominent symptom was a metallic taste, she complained of this even at times when she took food or drink. The operation was performed on January 25, 1897, and from then to the 27th, her temperature gradually went up until it reached 101°F. The iodoform gauze was discontinued and the temperature dropped to 99 5°F. The gauze was reapplied and the metallic taste was not noticed until about the fifth day; the iodoform gauze was again removed but the temperature rose to 101°F. This occurred about three times, and bismuth gauze was substituted; after this the temperature never rose above 100°F. The most striking symptom was the pulse—it was rapid and irregular, and the improvement in the pulse was more noticeable after the removal of the iodoform gauze than the improvement in the temperature.

DR. JOSEPH L. BOEHM spoke of a case of hydrocele in which the tunica vaginalis testis had been opened and the cavity packed with 10 per cent iodoform gauze; this was done for about a week, and about the ninth day the patient complained of intense headache and a coppery taste. The patient was subject to nephirits, but on examination of the urine no urinary symptoms of iodoform poisoning were found. On withdrawing the iodoform gauze all the symptoms subsided, and plain gauze was used.

In the City Hospital he saw a case of chronic empyema which had, for three months previously, a purulent discharge. At the suggestion of the Superintendent he used an iodoform emulsion, about an ounce every day for a week, in the pleural cavity. The patient then complained of a metallic taste, to which little attention was given. However the emulsion was discontinued and the powder substituted; about a dram was dusted into the wound on alternate mornings. After using the powder four days the patient complained of headache of a severe character; the powder was withdrawn, and five days later the patient said his headache had disappeared.

The hydrocele case he thought a little peculiar and attributed the absorption to impaired vitality of the patient, who was subject to nephritis, and was a strong alcoholic.

DR. DIXON, in closing, said the tongue in this patient was not dry at any time during the attack nor was there any coating. In regard to the moist gauze and the iodoform emulsion, he thought the two were

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identical. The gauze is made from an emulsion of iodoform and is kept moist by means of glycerin. Of course, if it is made fresh it might add to the strength of the gauze.

DR. V. P. BLAIR read a paper (see page 9, this issue) on

Malarial and Blackwater Fever.

DISCUSSION.

DR. R. B. H. GRADWOHL voiced the sentiment of the Society in thanking Dr. Blair for his admirable paper. The latter part of the paper the speaker considered especially interesting in relation to the etiology of blackwater fever. Dr. Bransford Lewis had collected a number of cases of hemoglobinuria in the South, where it was a common experience after the administration of quinine. In Italy, at the last Congress, in searching for the malarial germ and the pathology of blackwater fever and hemoglobinuria of malaria of that region, it was stated that this was due to actual blocking of the glomeruli vessels by the malarial parasite, and sections were offered in proof of the statement. He mentioned that several years ago he had seen it suggested in the *British Medical Journal* that blackwater fever be treated by inunctions of creosote, and that favorable results had been reported. He asked in what proportion of cases had quinine been used as a prophylactic measure, and with what success, and also if there were any statistics on the subject.

DR. W. S. BARKER thought the injection of quinine hypodermatically a most desirable method in certain cases where the usual method of administration was not effective, and deplored its neglect in urgent cases. In quite a number of cases, perhaps a score, especially among children, he had injected the hydrochlorate of quinine hypodermatically and obtained results which would hardly have been obtained with the ordinary method of administration, owing to the fact that the stomach repeatedly rejected it, or that there was but a slight degree of assimilation of the drug in the alimentary canal.

DR. FRANK WINTER (Captain and Assistant Surgeon, United States Army) said he had made some observations of the occurrence of these fevers, during the last few years, in the Phillipine Islands. The essayist's mention of the relationship between an active, energetic life in the sun in the tropics and the occurrence of these fevers, he thought very important. There can be no question about the occurrence of

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these fevers being in direct proportion to the extent of exposure to the sun. In this connection he said that in a volunteer regiment to which he was attached during part of an active campaign when the men were exposed to the sun the sick list reached 33 to 35 per cent of the strength of the regiment; as soon as the active campaign was suspended the list fell to 8 or 10 per cent. Another point is the anemia following the use of quinine. Quinine is given as a prophylactic even when the men are not sick, and it is found that the blood-count is materially diminished in red blood corpuscles. The results of his observation as an army surgeon in Manilla and vicinity had been to demonstrate that quinine had a deleterious effect on account of the anemia following its use, consequently he is not an advocate of its use; it is still given, though not nearly to the same extent as formerly. The principal measures of prophylaxis followed are avoidance of exposure to night air and the consumption of sterilized water. That the night air is deleterious and harmful is shown by the fact that the Spaniard and Philipino always close their houses as tight as they can at night; as soon as the sun goes down the windows and doors are closed. Their houses, too, are built above the level of the dew point, and usually on bamboo sticks, six feet above the level of the ground. A Spaniard or Philipino would rather sleep in a tree than on the ground. The water supply is of much importance and efforts are made to boil this for drinking purposes. The soldiers are often placed in such a position that it is impossible to boil their drinking water, so that any deductions made of the invasion of malarial intoxication, as concomitant with certain forms of water consumption are, of course, erroneous. Beyond these things he did not recall any measures instituted for the especial prevention of malaria.

DR. H. W. SOPER asked if the administration of quinine hypodermatically had been followed by abscesses. In a patient seen in the hospital, several abscesses had formed after the subcutaneous use of bimuriate of quinine.

DR. BLAIR, in closing, said he believed the attacks of fever seen on board ship were more severe, as a rule, than those seen ashore, the greater stimulus of sea air bringing on a more pronounced reaction. Except in the color of the vomit, the absence of methemoglobin in the urine, the clinical picture of these cases differ little from that of non-fatal blackwater fever. Many observers call attention to the im

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perfect absorption of quinine when the mucous membranes are congested during the acute attack. I saw several cases where the vomiting, high temperature and dry skin continued almost uninterruptedly for several days and did not yield to other treatment, but which straightened out after two to five seven grain doses of bimuriate of quinine administered hypodermatically. No attempt was made at antisepsis or asepsis but there were no abscesses or local inflammation. The local sequelæ are rather hard nodules, somewhat anesthetic, lasting several months. The bimuriate causes little pain, and is soluble in about double its weight of water. Surgeon McGregor gave, in three cases of blackwater fever, from three to five grams of quinine, with recovery. Dr. Moffat, P.M.Q, of Uganda Protectorate, and Robson, of Birmingham, reports groups of unselected cases in which those receiving one to two drams of quinine early in the attack rerecovered, while those who received none, or received it late, succumbed.

All dwellers in the tropics, whether foreigners or natives, are impressed with the dangers of night air. That they have tradition and all precedent to support their belief, I grant; that it is an unqualified evil, I doubt. The coast blacks on the shore sleep in huts, but, among the hundred or so deck passengers and Kroo boys we had on board, who, rain or dry, slept on deck, with rather insufficient covering, I never saw any evil results, that I could attribute to exposure at night. It is rather stimulating, and if one is protected from chill by woolen covering, I do not see why, in itself, it should be so bad. It may, by its very stimulation, have the effect of bringing on an attack of fever similar to those produced by contact with sea air, but we know that, within ordinary limits, pyrexia itself is not an evil, and that a person often feels better after an attack of fever than before. It seems to come within the range of my mental vision to see how a person can be in a better physical condition when breathing in, and having the face and possibly the hands and feet in contact with the comparatively refreshing night air, and with occasional sharp attacks of fever, than the one who is continuously on the dead level of climatic depression and chronic malarial intoxication. I believe it is the latter class that furnish the chronic invalids, the tropical wrecks, and the subjects for blackwater fever. I know the latter often follows exposure, but there is such a thing as acquiring tolerance to exposure.

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A. Bryson says that, in 1844, twenty men and an officer went from the "North Star" to do boat duty at Sierra Leone. The men all took wine and bark; the officer did not, and he was the only one who suffered from an attack of fever. That two boats in the same year were detached from the "Hydra," to examine the Sherebro river; the men in one boat took wine and bark, and were exempt; while all the men in in the other boat, who took no bark, were, with the exception of the captain, after an exposure of only two days, attacked with fever of a dangerous character.

As to the results of quinine prophylaxis, he could not give accurate figures. There seems to be a general impression among workers on the coast that the good results from the use of five grains of the drug morning and evening, or fifteen grains once a week, outweighs the evil of continuous quinine stimulation, and the danger to the red-blood corpuscles. However, A. Plehn, who is a champion of its use, warns against large doses in the Camaroon, on account of the liability in that country of blackwater fever. He recommends one-half gram each five days, to be carefully increased, if needed. Some say its use should be limited to those who are to make a stay of a few months or a year.

Meeting of October 17, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

Rupture of the Bladder.

DR. H. L. NIETERT presented a specimen of ruptured bladder removed from a patient, post-mortem. The rupture was one and one-half inches in length, and extended through the entire thickness of the bladder wall. The patient entered the hospital in a semiconscious condition. The history obtained was that he had been sick for three weeks, and complained of tenderness over the abdomen; there was slight distension of the abdomen, no vomiting, pulse good, temperature 101°F. There was constipation, but after saline catharsis, the bowels moved. The patient died the day after entering the hospital. Post-mortem, the peritoneal cavity was found to contain a large amount of urine, the peritoneum highly injected, and the bladder ruptured.

Not being satisfied with the history he had been able to elicit, he

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sent for the relatives of the man, and they gave a history entirely different from that secured from the patient. It was stated that the patient had been drinking, and on October 11th he was very much intoxicated, during which time he fell on the pavement and struck on his abdomen. He got up, complaining of pain in his abdomen, and went home to bed. The pain grew worse, and he was sent to the hospital.

The specimen is interesting, as it shows that a very serious damage may be done an important organ from a seemingly trifling injury, and without external signs of injury. Looking at the mucous membrane, it appears perfectly normal; there is evidence of a contusion, however, on the posterior wall. The highly injected condition of the peritoneum, without other signs of peritonitis, is interesting. There was no pus, no agglutination of the peritoneum, showing that the urine in this case was perfectly sterile. In several other cases of ruptured bladder, due to external violence, he had noticed the highly injected condition of the peritoneum, the absence of pus, agglutination of the peritoneum, or lymph.

Ectopic Pregnancy.

He also exhibited a specimen showing an extrauterine pregnancy. The patient gave a history of having trouble for some time with her ovaries and tubes, and was treated for a long time The day before entering the hospital she was seized with a fainting spell, and became very weak When she entered the hospital she was very weak and complained of a severe pain in the abdomen. On examination, a large mass was discovered in the cul-de-sac, extending to the right iliac region. After several examinations, a diagnosis of extrauterine pregnancy was made. The uterus was curetted, and a portion of the endometrium was obtained, which was submitted to microscopical examination. This showed the mucous membrane was covered with normal epithelial tissue; there was some proliferation of the glandular element, but no deciduous cells were present. When this report was received, it threw a doubt upon the diagnosis, and he thought that instead of an ectopic pregnancy, he had to do with a pelvic abscess. The patient was prepared for laparotomy, and also for an operation through the vagina. The latter was performed, and the cul-de-sac opened. A large amount of clotted blood was discovered,

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and this convinced him that the diagnosis of extrauterine pregnancy was correct. Laparotomy was then performed, and the tumor shown was taken out.

From this case, it would seem, that we can not always depend upon scrapings from the uterus, to make a diagnosis of extrauterine pregnancy.

DISCUSSION.

DR. HUGO EHRENFEST said he had seen the case of extrauterine pregnancy two days before the operation, and two days after the patient entered the hospital. At this time she did not show any symptoms of shock, and was not in a bad condition, such as we see in cases of ruptured ectopic pregnancy. This, he thought, probably due to the comparatively small amount of free blood in the abdominal cavity. At the first examination, he stated, that from the form and consistency of the tumor, he thought it was a case of ectopic pregnancy. Notwithstanding that the introduction of any instrument into the cavity of the uterus is strictly contraindicated in case of suspected ectopic pregnancy, he suggested that a slight curettement be made, in order to obtain a portion of the endometrium.

The patient being in the hospital, and under constant observation, he felt that, if acute hemorrhage should follow the curettement, she would have immediate attention, and an examination of the endometrium would established the proper diagnosis. Dr Fisch examined the scrapings, and reported that he found no sign of formation of decidua. This seemed to exclude the diagnosis of extrauterine pregnancy, and the speaker was, therefore, surprised, when, on opening the abdomen, it was found that the clinical diagnosis was right. This made the case very interesting, as the text-books everywhere state that the endometrium always forms decidua in cases of ectopic pregnancy. He had started a histological examination of the removed tube, but did not have time to complete it. One section showed some large cells, with large nuclei, cells which looked like decidua, but he was not prepared to say they were decidua. He intends to complete the examination, and endeavor to find villi, which, of course, would establish the diagnosis of ectopic pregnancy.

In connection with this case, he showed a specimen of ectopic pregnancy, taken from a patient a year ago. The pregnancy was about the middle of the fourth month, and rupture did not occur until

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during the operation of laparotomy. The woman had only the symptoms of a simple abortion, and was treated for that by another physician, when he discovered the tumor and called the speaker in consultation. The diagnosis of ectopic pregnancy was made, and the tube containing an embryo of about 12 centimeter length extirpated.

DR. CARL FISCH said this case was very instructive to him, inasmuch as the microscopical examination had not borne out the clinical condition. In regard to the report made on the findings, he had nothing to retract. There had one point been raised as questionable, and he was glad to be able to fortify his assertions, by Dr. Gellhorn coinciding with his opinion, that is, that the specimen taken from this case did not show any decidual changes. The question raised was the possibility of these scrapings coming not from the uterine mucosa, but from the cervix. He asked Dr. Nietert if there was any question about this point.

NR. NIETERT said he felt sure he obtained the scrapings from the uterus; he went into the cavity almost an inch.

DR. FISCH said it never occurred to him that the scrapings could be other than uterine. He brought the matter up, however, at the suggestion of Dr. Gellhorn. Personally, he had had never a doubt that he was dealing with uterine mucosa, and had to continue to stick to the tenor of his report. This uterine mucosa was perfectly normal. The superficial epithelium consists normally of columnar cells, which change early in pregnancy to a flat form. There was not the slighest change in these cells. There was congestion, but no change in the glandular structure and in the interstitial cells. The specimen showed nothing to indicate that an extrauterine pregnancy existed. The text-books tell us that peculiar decidual changes take place, but to his knowledge there were no reports extant in which the mucosa was examined at a very early stage of extrauterine pregnancy. Since it was supposed that this case was more than three or four weeks old, we might presume that the reaction in the mucosa had not yet taken place; the changes are always seen, if curetteing is done at a later period of extrauterine pregnancy.

DR. NIETERT asked if only one piece of the scrapings was examined.

DR. FISCH said he examined every piece; he did this in all examinations of uterine scrapiugs submitted to him. In addition, he would

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mention another point against the theory of the scrapings being from cervix, that was, the great thickness of the removed portions. The mucosa of the cervix is very thin, and even in a hypertrophid condition, would not be as thick as these specimens.

DR. GEO. GELLHORN said he wanted to explain why he suggested that the scrapings might have come from the cervix. When he saw one of the sections, prepared by Dr. Fisch, he fully agreed with him that the mucous membrane did not show any changes characteristic for pregnancy. He noticed, however, that the nuclei of the epithelium cells were arranged on the basis. This arrangement is typical for the epithelium cells of the mucous membrane of the cervix. In contradistinction, the nuclei of the epithelium cells of the endometrium are located in the middle of those cells. Therefore, he was not surprised not to find decidual changes, as the latter only take place in mucous membrane of the body of the uterus.

For the lack of the decidual changes in other sections which, according to Dr. Fisch's view, certainly come from the endometrium, another explanation suggests itself. We know that decidual changes in the uterus progress as long as the ectopic pregnancy advances. After interruption of the pregnancy, the uterine decidua undergoes a retrograde involution. Since, in this case the ectopic pregnancy was only of short duration, and interruption might have occurred some time ago, we can presume that at the time of the curettement, the decidual changes had already disappeared, and the normal state was re-established.

DR. FISCH said that in the examination of the uterine scrapings, we had a very distinct and characteristic staining reaction on the one side of the cervical, and on the other side the uterine glands. The cells of the cervical glands produce mucus; therefore, in specimens stained with hematoxylin and eosin, their inner two thirds appear in a bluish hue, or remain entirely unstained; while in the cells of the uterine glandular structures these portions retain the ordinary protoplasmic character, and are stained deeply with the eosin. In the present case, not a single cell exhibited the first picture, all of them took the eosin. The fact, that in some places their nuclei appeared less characteristically situated, than in the normal uterine glands was explained by the hypertrophic condition of the glands, where the proliferation of the epithelial cells exceeds the given space, and the cells appear somewhat irregularly arranged.

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DR. HENRY JACOBSON said it was unfortunate that the history of the case of ruptured bladder was not obtainable, and a diagnosis made antemortem. If this could have been obtained, the man's life might have been saved, as suturing of ruptured bladder walls, with drainage early in these cases, usually results in recovery, with modern methods and technique. The absence of blood in the urine and his voiding several ounces of urine, was misleading. In the female, rupture of the bladder rarely occurs, except during labor. And then into the vagina where there is no peritoneum and the walls are thinnest. The mortality in these cases is almost *nil.* When rupture of the bladder occurs in persons who drink a great deal of alcoholic stimulants, the urine not only escapes into the abdominal cavity, but there is usually an interstitial nephritis, which plays an important part in causing the death of the patient.

DR. WM. S. DEUTSCH said he saw a case a few days ago of a man who fell from a height of eight or ten feet. He fell in such a way that he struck with his perineum against the edge of a washtub, tearing the urethra through and sustaining also a rupture of the bladder. The unusual feature of the injury is in the fact that the bladder was ruptured, although the blow was not received directly over the bladder. The rupture in the bladder was not at first detected, on account of the torn urethra, and because the distension of the bladder seemed to contra-indicate a torn bladder. It was afterwards found that the bladder had been torn, and the patient died from this injury, no doubt.

DR. T. C. WITHERSPOON read a paper (see page 32) on

Spinal Curvature.

I suppose there is no subject presenting itself to the doctor that causes him to feel his helplessness more thoroughly than that of scoliosis. In the last year I have had two fine, strapping, strong girls come to my office with scoliosis. I looked up everything on the subject, and could find nothing to help me, so I was awakened to an unusual interest to explain scoliosis—upon what basis does this lesion rest? How is scoliosis possible? Upon looking through a few authorities, I found that most of them agreed in this one particular, that one cause of scoliosis of adolescence is positional. Scoliosis is due to the fact that at that time of life children go to school, sitting at their desks, becoming fatigued with the long hours, leaning over to one side, holding their shoulder as steady as they can, they swing the pelvis and

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hold it at a faulty angle; there is a shortening through the column, and finally, a twisting of the pelvis and at the time a curvature of the column. Such authorities as Barwell, Clark, H. A. Wilson, Noble Smith, all ascribe the cause largely due to position. I have mentioned some things, which have occurred to my mind that might help to throw some light on the subject.

He then presented a patient, a boy, and called attention to the fact that the rotation was less below than above, showing the thoracic point where the ligaments bind the greatest, that is, were most firm; in the lumbar region, where they were not so firm, there was more play between the vetebræ, and less curvature. When standing, the patient showed less lordosis, which is explained by the fact that we have an articular surface, with a possible shifting position up and down. We have here a typical condition following tubercular trouble in the bodies of the vertebræ. We have a kyphosis, showing one vertebra giving way to the disease locally, and collapsing at one point. He called attention to the small amount of curvature latterly seen in this case.

The next patient presented was a man, giving a history of trouble dating from his third year and stopping at his eighth year. He showed this case, to call attention to a rachitic rather then a tubercular condition. The characteristic curvature seen, looked like rickets, but it might not be due to that. It shows at no point an angle, as though it were one complete round curve. Every time the patient breathes, the ribs swing up in front, and at the side. Being articulated with the body of the vertebræ and the transverse processes they raise the vertebræ. At one point the ribs are more at a right angle that at another.

He then demonstrated his manner of treating this condition, by strapping the part with adhesive straps in such a manner as to hold the ribs, fixed on one side so that with every inspiration the opposite side is raised, but the strapped side is at rest, thus tending to straighten the column. The strap should be carried well over to the median line. When the one side is held firmly strapped, the opposite becomes markedly expansive. He said he had two patients whom he was treating in this manner, except that the straps are made of cloth, and worked into a shape resembling a corset; each morning it is tightened, and can be kept in that state. This governs the respiratory

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movements, and produces a decided expansion of the opposite side. This, in connection with exercise, was his usual treatment in these cases.

He said scoliosis is seldom seen in adults, but very common in children. This is probably due to the bony changes taking place between the ages of 16 to 24 years, accompanied by a steady increase in the ligamentous lengthening, and, he thought. many of these patients get well without any treatment.

DISCUSSION.

DR. L. DRECHSLER said he had several cases under observation. One, a young man, 24 years of age; says his curvature was due to an injury received while playing with a younger brother. Another patient knew nothing of the curvature being present until he came up for an insurance examination in some fraternal society. In each case the speaker recommended exercise, especially the routine exercise obtained in some of the German turn societies. He also recommended that a bar be suspended, by means of rings and hooks from top of a door frame between two adjoining rooms at home, and every time the patients went through they should swing themselves; he believed that the exercises practiced on a horizontal bar, in which the body weight was suspended by the hands. was the most beneficial.

THE BETHESDA PEDIATRIC SOCIETY.

Meeting of December 27, 1901; Dr. John Zahorsky, President, in the Chair.

DR. G. M. TUTTLE read a paper (see page 22, this issue) on

Purpura.

DISCUSSION.

DR. FISCH.—Purpura is not so very rare in chronic tuberculosis. and its occurrence in this disease gives some suggestion as to its etiology. This symptom is found in very chronic and latent forms of tuberculosis which suddenly assume an acute form. The disintegration of an infected focus and its entrance into the blood causes an inundation of the system with toxin and bacilli. It is in these cases that

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purpura occurs. This leads us to assume that purpura is due to a large amount of toxin entering the circulation very suddenly. This explanation might hold good for all the forms.

The cause of the hemorrhage is a change in the blood-vessels. Blood changes do not directly induce purpura; ordinarily, in simple purpura, the blood is normal.

Most commonly no lesion to the blood-vessel can be discovered microscopically.

There is one difference between alkaloids and toxins that must be borne in mind, and that is, that the former do not become fixed to the cells, as is the case with toxins.

DR. LIPPE.—Purpura in tuberculosis must be very rare, as I have not seen a single case in hospital and dispensary practice. Recently, I saw a case of purpura which was characterized by the fact that it followed tonsillitis. Recurrent attacks of tonsillitis were followed by repeated outbreaks of extravasations in the skin.

DR. ZAHORSKY.—Two classes of purpura must be distinguished: The febrile and the afebrile. The former is evidently due to an infection, the latter to a ptomain or leukomain intoxication.

As illustrating the former, sometime ago, I was asked to see a boy, 7 years of age, who presented numerous petechiæ on the skin. No special subjective symptoms were present and there had been no digestive disturbance. His temperature was subnormal, and his pulse was very slow, as is sometimes found in jaundice. No cause for the disorder could be ascertained.

In another case, an infant, about 16 months of age, the onset was marked by a febrile movement and polyarthritis. Numerous petechiæ and many erythematous and papular lesions appeared on the skin. An endocarditis developed after a few days. Salicylates had absolutely no effect on the course of the affection.

Very interesting are those recurrent forms associated with digestive disturbances, and known as Henoch's purpura.

DR. TUTTLE.—It must be admitted that this subject is vague and unsettled. The most common clinical forms are associated with chronic wasting diseases in infants and in the aged. These must depend on the absence of propor nutrition to the blood vessels.

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REPORTS ON PROGRESS

MEDICINE.

In Charge of W. M. HOGE, M.D.

Transmission of Tuberculosis Through Meat and Milk.

John J. Repp (*American Medicine*, November 2, 1901), after an exhaustive study of this subject, concludes:

1. That tuberculosis may be transmitted to animals through their eating the meat of certain other animals which are tuberculous, or by their being inoculated with it.

2. That tuberculosis may be transmitted to animals by their ingestion of the milk of certain cows which are tuberculous, or by their being inoculated with it, both when the udder of the cow is diseased and when it is healthy.

3. That, therefore, the meat and milk of certain tuberculous animals contain living, virulent tubercle bacilli.

4. That the tubercle bacilli of cattle are pathogenic for man.

5. That, therefore, the meat and milk of certain tuberculous animals are capable of producing tuberculosis in human beings who use their products as food.

The Diagnosis of Gall-Stones.

Charles G. Stockton (*Ibid.*, November 30, 1901) considers it as demonstrated that experimental infection of the gall-bladder, leading to a mild cholecystitis is almost invariably followed by the formation of gall-stones. This leads to the natural inference that gall-stones are usually the result of infection and low grade inflammation of the gall-bladder.

1. As regards symptoms—cholecystitis is often mistaken for gastralgia.

2. We must remember the curious signs of transient pyloric obstruction that follow adhesions of the liver and gall-bladder to the lower end of the stomach.

3. We should remember that jaundice is a far from necessary accompaniment of cholelithiasis. When a steadily increasing and persistent jaundice is met, it is safe to attribute it to outside pressure, by a new growth, most probably.

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The chief symptoms of gall-stones and the accompanying cholecystitis are:

First, paroxysmal pain; second, tenderness below the junction of the 9th rib and cartilage; third, vomiting; fourth, ague-like fever; fifth, jaundice; sixth, formation of tumor; seventh, collapse; eighth, passage of calculi in the stools.

Osteitis Deformans.

Frederick A. Packard, J. Dutton Steele and Thos. S. Kirkbridge, Jr., (*American Journal of Medical Sciences*, November, 1901) report a case of this disease, with results of histological examinations. They conclude that besides this case reports of sixty-six true cases are found in the literature.

That osteitis deformans is a distinct disease, of obscure etiology, but possibly allied to osteomalacia, fragilitas ossium and acromegaly. That it is a disease of later adult life especially, and there is little evidence of a family tendency.

The most noteworthy physical characteristics are, enlargement and forward projection of the head, dorso-cervical kyphosis, the prominence of the clavicles, the spreading of the base of the thorax, increase in the width of the hips and outward and forward bowing of the legs. Its essential pathological characteristics are:

1. Absorption of the compact substance causing enlargement and confluence of the Haversian canals.

2. Formation of new bone, which runs diffusely through the affected and healthy portions. This new bone remains uncalcified, and is in turn reabsorbed.

3. The conversion of the medullary substance into a vascular connective tissue containing fat cells, giant cells and leucocytes. In a small proportion of reported cases, cysts filled with gelatinous material and giant-celled sarcomata occur in the medulla.

4. As a consequence of these three processes the ordinary relations of the compact substance and medulla are destroyed. The bones become exceedingly thickened and asymmetrical, but since the new bone tissue remains uncalcified, its elasticity permits of great deformity of the long bones from the weight of the body, and fractures do not occur.

The etiology of the condition is as obscure as when Paget first described it.

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NEUROLOGY.

In Charge of M. A. BLISS, M.D.

The Separate Localization in the Cortex and Subcortex of the Cerebrum of the Representation of Movements, and of Muscular and Cutaneous Sensibility.

Dr. Chas K. Mills (*Journal of Nervous and Mental Diseases*, November, 1901) presents an excellent paper contributing to the discussion of the much mooted point whether the motor area is also sensory. He cites numerous cases from his own experience and from the observations of others, in support of his contention that the motor area is purely motor. The question of localization of the stereognostic sense is quite fully discussed, Dr. Mills placing it posterior to the Rolandic area.

The paper was discussed by Drs. G. L. Wallace, P. C. Knapp, F. W. Langdon, Wharton Sinkler, Theodore Diller, James Hendric Lloyd, Joseph Collins, Hugh T. Patrick, Joseph Sailer and Chas. L. Dana, a group comprising the foremost neurologists of America. A good deal of good-natured raillery was indulged in, at the expense of Dr. Mills, but, upon a careful reading of both the paper and discussion, one will conclude that he has learned the position of all the acute observers on this most important question. A remark of Dr. Patrick is, apropos: The most brilliant localization he had made, he said, had been made on the assumption that the post Rolandic area was sensory. He also must admit that the most brilliant errors he had made, had been made on the same assumption.

Dr. Mills, in closing, said: "One area encircles the other; they may indentate each other, because their frontures are not like the lines of our diagrams." He claimed that the majority of the association (American Neurological) was advancing to his position, described by the title of his paper.

The Stadia of Mental Diseases.

Theodore H. Kellogg (*Jour. Nerv. and Mental Dis.*, Nov., 1901) says that a better conception of nervous diseases, as well as mental diseases, of a curable kind, can be had by noting the fact that they follow the general course of all diseases, in having four stadia: one of incubation, one of acute symptoms, one of debility from nervous

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forms during the height of the attack, and one of convalescence.

His conclusions, after discussing exacerbations, remissions, inter missions and lucid intervals, in their relation to the stadium acutum, are that the vast majority of attacks of mental disease have but four simple stadia. The main stadium acutum is constituted chiefly of the maniacal, melancholic, or stuporous states, which are mere symptom-complexes alternating or replacing one another, though sometimes mistaken for separate attacks of insanity. Mental disease must be regarded as one continous pathologic process with periodic fluctuations, so constant that remissions and intermissions are to be viewed as part of the morbid phenomena.

The diversified curricula of insanity, and the artificial variety of its forms described by modern writers, may, in great measure, be reduced to clinical simplicity by the law of the stadia, conjoined with the maniacal, melancholic, and stuporous states, as here rightfully assigned to the position of symptomatic syndromes, rather than independent forms of insanity.

Gross Lesions of the Basal Ganglia.

M. L. Perry (*Medical Record*, November 2, 1901) reports three cases in which there was involvement of the posterior two-thirds of the lenticular nucleus and caudate nucleus, the optic thalamus, and the pineal gland. The first was an acute mania; the second, a chronic dementia; the third, a chronic mania. None presented any symptoms of localized brain disease. Dr. Perry's conclusions, from a study of these cases, are as follows:

1. The corpus striatum (caudate and lenticular nuclei) has no intimate relation with either the motor or the psychical spheres.

2. There may be a very extensive lesion involving both the caudate and the lenticular nuclei, without giving any symptoms.

3. There is in the posterior portion of the lateral nucleus of the optic thalamus an area, irritation of which will produce immediate loss of consciousness with convulsive movements upon the opposite side, and destruction of which will produce immediate death.

4. There may be a tumor of considerable size involving the pineal gland without giving any pressure symptoms.

5. The pineal gland may be entirely destroyed by disease without producing symptoms.

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6. There is no tract of nerve fibers originating in the pineal gland and connecting it with the remainder of the brain.

SURGERY.

In Charge of
A. V. L. BROKAW, M.D., and E. C. GRIM, M.D.

Fracture of the Skull.

G. P. Conn, of Concord (*International Journal of Surgery*, October, 1901), reports an interesting case of severe fracture of the skull.

Mr. E. G. was thrown some distance from a slide-board, and struck his head on a hard pine cross-tie. He sustained a compound comminuted fracture of the skull, involving a large portion of the frontal bone, including almost all the supraorbital plate on the right side and more than half on left side. The wound of the scalp was about two inches in length, semilunar, beginning in the eyebrow over the external canthus of the right eye, and extending upward and laterally to near the median line of the nose. The scalp was turned down over the eye, and adhering to the integument, and inverted with it was one of the larger pieces of the bone, consisting of both plates. The other fragments were loose, many of them detached and driven into the brain substance, and the pieces of the supraorbital plate were turned up and found between the hemispheres of the brain. Twenty-seven pieces were removed. The surface of bone removed was greater than the scalp wound, and the loss to the internal table was greater than to the external table. There evidently had been much loss of blood. A compress and bandage had been applied to the head after the accident. He, in a semi-conscious condition, reached the hospital twelve hours later. The wound was disinfected with a 1 to 500 solution of formalin and the pieces of bone removed, dissecting back and leaving as much periosteum as possible. Some pieces were imbedded in the brain, and fragments were found pressing upon the optic nerve. The wound was closed with catgut and a gauze drain was inserted, extending from the lower angle of the wound over the right eye, and in front of the lobes of the brain, across and beyond the left eye. There was no sepsis. His eyes gave him slight trouble in focusing for two weeks, and partial ptosis of right lid remained, due to loss of bone. After the first few days the recovery was uneventful, and he returned to his home in twenty-eight days.

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Suprapubic Cystotomy and Retrograde Catheterization as a Guide in Perineal Section for Obliterative Urethritis.

Crutcher (*International Journal of Surgery*, October, 1901) in his paper gives extracts from the experience of a number of prominent surgeons, who refer to eight cases occurring in their practice, and all give a concensus of opinion. One of them expresses it as follows: "I consider retrograde exploration and instrumentation via a suprapubic cystotomy much safer than a prolonged and tedious search for the urethra via the perineum."

The author refers to four cases in his practice, and reports one in full.

This last was a vigorous man, 60 years of age, who had been suffering from a stricture for many years, and had been using instruments on himself. The patient finally failed in this, and a physician called, failed, after two hours of manipulations. Hemorrhage from the urethra followed. The author was called a few hours later, and found the bladder distended and much pain in the lower abdomen. The bladder was exposed, anchored to the skin, and aspirated slowly to prevent shock, and then freely opened. This procedure occupied twelve minutes. Five days later the perineum was opened, and the urethra was found to terminate in a blind pocket, amidst a mass of cicatricial tissue. The visceral end was nowhere to be found by the present tactics. A small, grooved male sound was now passed from above, and made to point in the perineum. It seemed to pass without substantial resistance to a point at least one-fourth inch anterior to the termination of the pouch, marking the termination of the anterior section of the urethra. It was now possible to see on the ridge of tissue to the inside of the sound, a minute spot that differed in appearance from the mass of scar tissue all about it. This proved to be the capillary passage that served as the connecting link between the pouches at the ends of the two sections of the urethra. The operation was completed in the usual manner, the bladder being drained through the perineum. The case gave no further trouble, and a No. 22 (English) sound passed with ease.

As a rule, the author advises the closing of the bladder immediately following the completion of the perineal work, always leaving ample drainage through the pre-visceral space, down to the walls of the bladder.

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BOOK REVIEWS.

Materia Medica, Pharmacy and Therapeutics. By O. L. Potter, A.M., M.D., M.R.C.P. Eighth edition; revised and enlarged. 1901. Philadelphia: P. Blakinston's Son & Co.

This work is more valuable than ever as a ready reference book, having been brought up to date, as shown by the chapters on the sera-antidiphtheritic, antistreptococcic, etc. Some articles have been re-written, and many of the latest remedies—dionin, eucaine, orthoform, protargol, and others—are given a place.

We are sure this book needs no introduction, and nothing further than the announcement that the eight edition has been reached; however, we can not review it without commending it to the student and practitioner, and feel that it should have a place on the desk of the beginner, and in the library of every practicing physician.

The Standard Medical Manual: A Hand-Book of Practical Medcine. By Alfred S. Burdick, M.D., junior professor of practice of medicine, Illinois Medical College; member of the American Medical Association, the Illinois State Medical Socity, etc. Illustrated. Nine hundred and twenty one pages. Price: Cloth, $4. 1901. Chicago: G. P. Engelhard & Co.

Diseases and disorders are treated alphabetically, beginning with abortion and ending with yellow fever. Each disease is defined, its varieties specified, and the etiology, pathology, and semiology briefly described. The treatment, however, is extensively discussed, and valuable medicinal formulæ completely stated. The work, then, is really a general guide to the management of the sick, with brief descriptions of their disease. This method of treating the subject is eminently practical for ready reference. It will serve useful to the practitioner, or even the student, for quick review of any large subject. Minor surgical, obstetrical, gynecological, and other diseases are found side by side, with the purely medical.

The contents of the appendix are: Examination of the urine; examination of the stomach contents; bacteriological diagnosis; the administration of drugs; dose table, an epitome of the National Formulary, etc. Food for the sick, and infant feeding are given several pages. The therapeutics recommended are fully abreast with modern progress. While this book is called a manual, it contains

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1,000 pages. It will, without doubt, be very popular with the busy practitioner.

The Diseases of the Respiratory Organs, Acute and Chronic. Arranged in Two Parts. By W. T. Waugh, A.M., M.D., professor of practical and clinical medicine, Illinois Medical College, 1901. Chicago: G. P. Engelhard & Co.

This small volume, scarcely larger than a compend, goes over the field of diseases of the respiratory organs in a very brief way, in fact, some of the articles are so short that they are of little value to the student or practitioner; the chapters on pneumonia and phthisis are fairly well written. It is certainly surprising to the reviewer to see no mention made of antitoxin in the treatment of membranous croup, which the author recognizes as due to the presence of the diphtheria bacillus. His advice to allow three weeks for nature's cure in empyema, occurring in children, is contrary to the teachings of the leading pediatrists. The only excuse that this work has for its being at all, is a desire to push the dosemetric idea.

An International System of Electro-Therapeutics. For Students, General Practitioners and Specialists. By Numerous Associated Authors. Edited by Horatio R. Bigelow, M.D., permanent member of the American Medical Association; fellow of the British Gynecological Society, and of the American Electro-Therapeutic Association; member of the Philadelphia Obstetrical Society; of the Seciété Tramaise d'Electro-Thérapie, and of the Anthropological and Biological Societies of Washington, D.C.; Author of "Gynecological Electro-Therapeutics" and "Familiar Talks on Electricity and Batteries." Second edition; thoroughly revised and brought up to the present date, with several entirely new departments, embodying the most receut departments of the Science. Edited by G. Betton Massey, M.D., ex president and fellow of the American Electro-Therapeutic Association; member American Medical Association; author of "Conservative Gynecology and Electro-Therapeutics." Thoroughly illustrated. Price: Cloth, $6; sheep, $7. 1901. Philadelphia: F. A. Davis Company.

This is a very thorough presentation of the subject, from both the scientific and practical standpoint. There are chapters on the history of electricity, necessity for special education in electro therapeutics, electro-physics and electro-physiology, Roentgen rays—in short, every phase of the science, so far as medicine is concerned, followed by

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chapters on the application of electricity to the various departments of medicine, gynecology and obstetrics, diseases of the nervous system and the other branches, by men whose names are a guarantee of the work within these pages. Brubacker, Massey, Engelmann, Peterson, Tripier, J. Laphorn Smith, Morton, Rockwell, Sajaus, and others equally well known. This book is a very valuable guide to the practitioner who uses or wants to use electricity as a therapeutic agent.

Transactions of the American Electro-Therapeutic Association. Complete account of Ninth Annual Meeting held at Washington, D.C., September 19, 20 and 21, 1899; also Tenth Annual Meeting held at New York City, September 25, 26 and 27, 1890. Illustrated. Pages, xv-391. Size, 9¼x6¼ inches. Price: cloth, $2 net, delivered. Philadelphia: F. A. Davis Company, 1914-16 Cherry street.

This volume contains valuable papers with the discussion by many foremost men, on practically all the phases of electro-therapeutics. Each paper written by a specialist in a certain line of work, comprises the most advanced thought, and the results of most painstaking experiment and research. A few of the essayists' names may be mentioned: Rockwell, Massey, Apostoli, Newman and Files, are probably known to all who study this branch of the healing art, but there are many others who are almost equally prominent, and whose work has told in the progress of electro-therapy. We commend the book to our readers as worthy of careful perusal and preservation.

Sexual Debility in Man. By F. R. Sturgis, M.D., formerly clinical professor of venereal diseases in the medical department of the University of the City of New York; sometime visiting surgeon to the venereal division of the City (Charity) Hospital, Blackwell's Island; member of the American Association of Genito-Urinary Surgeons, etc. Author of "Student's Manual of Venereal Diseases," and one of the authors of "A System of Legal Medicine." 1900. New York: E. B. Treat & Co., 241-243 West Twenty-third street. Price, cloth, $3 00.

The dedication strikes one, on opening the book, as particularly appropriate. "To the sexual cripples of the United States, whose infirmities have in part contributed to his support, this book is gratefully dedicated by their obliged friend and author."

Anatomy and physiology of the sexual organs in the male are discussed somewhat fully and made the basis for the subsequent chap-

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ters. Masturbation and Onanism, etiology, pathology and treatment, are discussed quite fully. The suggestions as to treatment strikes us as sensible and safe. Spermatorrhea, pollutions, nocturnal and diurnal, and prostatorrhea are covered in three chapters, and the various phases of these disorders rather clearly presented. Each contributing cause is taken up and discussed, and the author's views are distinctly conservative and sound. Sexual impotence and sterility require four chapters for elucidation. Ten moderately good plates are included after the text, and a full reference list, with the index, completes the volume.

As the patients whose infirmities are described in this book comprise a greater or less per cent of every physician's clientele, a book written by a competent authority should find a considerable number of readers. The suggestions as to treatment seem rational and useful, and will aid those who seed to help the unfortunate class under discussion.

Text-Book of Histology. Including the Microscopic Technique. By Philipp Stohr, professor of anatomy at the University of Wurzburg. Fourth American, based upon the ninth German edition. Translated by Dr. Emma L. Billstein, formerly director of the laboratories of histology and embryology, Woman's Medical College of Pennsylvania. Edited, with additions, by Dr. Alfred Schaper, professor of anatomy, University of Breslau; formerly assistant professor of histology, Harvard Medical School, Boston. With 379 illustrations. 8vo., 500 pages. 1901. Price: $3 net. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut street.

This translation of Prof. Stohr's work on histology can be truthfully said to be a clear and concise exposition of the subject, printed in large, bold type, on good paper, with such direct, simple explanations of technique of each preparation, that places it at the head of all similar works, for the student; the physician and trained histologist will find much of interest and value in this volume.

The fact that this work is considered a standard in Germany, and has been translated into the Italian, French, Russian and English languages, is certainly evidence of the high esteem in which this work is held.

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ORIGINAL CONTRIBUTIONS.

Preparation of Patients For, and Their Treatment After Laparotomy.

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PHYSICIANS, whether they operate themselves or not, are so frequently called upon to play an important part in the care of patients who are obliged, for one reason or another, to undergo an abdominal section, that a discussion of the subject seems timely. It is the writer's belief, founded upon considerable experience, that the patient's welfare depends, not only upon the technique of the operation itself being properly carried out, but also upon the management of many so-called minor and, therefore, often neglected details, both before and after the performance of the operation, and this must be his excuse, if one is needed, for the minuteness with which the details of routine work has been gone into.

PREPARATION OF THE PATIENT.

When the condition for which the operation is to be undertaken is chronic, and all the time desired can be had for the preparation of the patient for the ordeal which he is to undergo,

Read before the Vermont State Medical Society, October 11, 1901.

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much can be done which will not only diminish the risk about to be incurred by him, but which will ultimately hasten convalescence. In such a case it is for the patient's welfare that the hospital where the operation is to be performed should be reached, or the trained nurse employed if the patient is to remain at home, at least one week prior to the date fixed upon for the operation. This allows the individual to become accustomed to the attendants or the environment, which is of undoubted importance, as it tends to lessen the dread and nervous tension, both of which are great in such a crisis, even under the best of circumstances. During this week the sufferer should be encouraged to spend the greater part of the time in bed for the purpose of getting thoroughly rested; as patients too often come under operations physically exhausted. During this period massage may be employed to advantage in lieu of physical exertions, as it improves the circulation, promotes digestion and the general bodily welfare. As far as it is compatible with a healthy mental condition, visitors and friends should be excluded. A daily record of the patient's body temperature, pulse and respiration should be kept. An examination of the heart and lungs, and a final analysis of the urine should be made at this time. As it is of great importance that the intestinal canal be thoroughly collapsed at the time of operation, careful attention should be paid to unloading and emptying the bowels, as well as to getting the digestive organs in good working order. This is best accomplished, in the the writer's experience, by giving early in this week of preparation several small doses of calomel and soda, daily for three days; these followed each morning by a saline and, this in turn, on each of the succeeding mornings by an enema of from two to four quarts of saline solution. The rectum should finally be washed out with a pint of the same solution six hours before the performance of the operation. The large enema just alluded to is best given with the patient lying in the dorsal position with his hips elevated and his shoulders and head depressed, a fountain syringe being used for the purpose, the reservoir of which should not be elevated more than two feet above the patient's body.

The fluid should have a temperature of 110°F. and should be introduced into the canal slowly, being allowed to flow for two minutes then intermitted for five minutes and again allowed to flow for two minutes, this process to be repeated

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until the patient complains of a feeling of distension or of intestinal colic, which does not pass away within the five minute interval. By perseverance in the manner above described, several quarts of saline solution can usually be introduced into the colon in the course of three-quarters of an hour, with but slight discomfort to the patient, who should be encouraged to retain the fluid for another fifteen minutes before it is allowed to escape.

The administration of these enemata should be supervised by the physician, as the nurse seldom knows how to accomplish the introduction of the desired quantity of fluid into the intestinal tract, or, if she has the knowledge and experience, she has not sufficient authority over the patient to effect the desired result. The writer has often been told by nurses intrusted with this duty that they have given the enema of four quarts, not as ordered, but in divided doses, thinking probably that as "twice two equals four" they have performed their duty in a satisfactory manner. It is this misunderstanding that so often causes the patient's bowels to act on the operating table, not only to the great discomfort of the surgeon and his assistants, but frequently when the operation is about the vagina, endangering the patient's life.

The patient's diet during this week of preparation should be of an easily digestible nature and he should be encouraged to partake of liquids freely, for the purpose of restoring the normal quantity of fluids in the body. If needed, cardiac stimulants should also be given. Hot baths (110°F.) of ten minutes' duration should be given daily, not only for cleansing purposes, but to promote the secretions of the skin and kidneys. Special attention should be paid to the navel and pubic region, which should, if practicable, be shaved the day previous to that fixed upon for the operation, otherwise it must be done after the patient has been placed under the anesthetic. If the individual is a female, the time of the operation should be, when possible, arranged for a few days following the cessation of the menstrual flow, and a vaginal douche should be given, consisting of a saturated solution of boric acid, followed by one of formalin (one-half per cent) or of mercury bichloride (1 to 4000). It is well, during these days preceding the operation, to give the patient a mild hypnotic every other night. The writer has found a combination of sulfonal and chloralamid to answer the purpose. This hypnotic should

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always be given on the last night of the period under consideration.

If, however, circumstances do not permit us to follow the plan of preparation just outlined, the best course to pursue, in the writer's opinion, is to give the patient the evening before the operation two compound cathartic pills and on the following morning, at 6 o'clock, an enema of four ounces soap-suds and two ounces of glycerin, to be followed by a second enema two hours later, for a morning operation, and six hours later, for one to be performed in the afternoon.

The patient's skin covering the abdomen should be prepared for the surgeon by thoroughly cleansing it, applying a soap poultice for four hours over the site of the proposed incision, then replacing it by a compress moistened in a 1 per cent formalin solution. This compress is allowed to remain until the patient is placed on the operating table. These preparations can be made the evening before, if the operation is to be performed at an early hour in the morning; or in the morning, if an afternoon hour has been decided upon. It is wise to fix upon as early an hour of the day as practicable, as the patient in this case has less time in which to become exhausted from want of food, or restless or nervous from the dread of what is to come. It is of great important that, once the hour has been determined, there should be no postponement, as the writer has seen patients almost collapse under the extra nervous strain entailed by half an hour's delay.

If the operation is to be performed at an early hour (*i. e.*, 8 a.m.), the patient should be given a peptonized milk punch at 11 o'clock the previous evening, and if he awakens at 5 or 6 a.m. another may be given, but nothing more. It has been the writer's evperience that a small amount of stimulating and concentrated food, administered about two hours prior to the taking of the anesthetic, diminishes the liability to heart failure, and also lessens the nausea and vomiting, which so frequently follow the return of consciousness. If an afternoon hour has been decided upon, another peptonized milk punch may be geven the patient at 11 a.m. If the case is of an acute character, and an immediate operation is demanded, little more can be done than to cleanse the skin in the manner already described, and douching out the vagina, if the patient is a female. A stimulant should be administered, if the pulse is feeble, or if the patient is suffering from collapse, due to in-

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testinal perforation. In this condition, if the patient does not respond to the stimulants, the operation should not be performed, as it will prove of no avail If, on the other hand, the patient rallies, the operation should be done with as little delay as is practicable; but even in these cases it should not be forgotten that if we would have our work come to a successful issue, we must have plenty of light, assistants, and facilities for intra-abdominal irrigation.

If the operation is to be performed in a private residence, a room with a north light should be preferably selected. Its furniture should be removed at least twenty-four hours before the room is to be used. After it has been thoroughly cleansed, the windows should be left wide open for two or three hours, then closed, and the woodwork wiped off with bichloride solution, 1 to 1,000. The floor should be dampened with a similar solution. A table, twenty inches wide and thirty inches high, and varying in length according to circumstances, will be needed, as well as several small tables or stands, a wooden-bottomed chair, several large pitchers, four or five basins, several platters, and a fish kettle for sterilizing the surgeon's instruments. All these articles should be cleaned and washed off with bichloride solution before being placed in the operating-room. The room should be closed after all the articles have been placed in it, and should remain so until needed. Several dozen towels, sterilized by boiling or by steaming in a sterilizer, and several gallons of cold and hot water, sterilized by boiling, complete the arrangements to be made before the arrival of the surgeon, who provides instruments, ligatures, suture materials, and dressings. For emergency operations it is best to make no attempt to clean the room, but the floor should be covered with a sheet wet with bichloride solution. This avoids vitiating the air of the room with dust.

The patient should be so clad for the operation so as to reduce to a minimum the bodily exposure. The clothing should consist of a warm undershirt, drawers and stockings—the last named often being made in one piece.

The anesthetic should be administered to the patient before he is brought into the operating-room. If the anesthetic to be employed is ether, it is advisable to administer hypodermically one one-hundredths of a grain of atropine half an hour before the induction of the narcosis, as this tends to

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diminish bronchial secretion, and materially lessens the amount of ether to be given. If, for the administration of the ether, a closed inhaler is used, of the Clover type, and the gauze contents are saturated with the fluid at the start, the mouthpiece being rapidly brought down over the patient's nose and chin, so as to exclude the air, the anesthetic state will be quickly induced, and there will seldom be a stage of excitement. In this way the patients can be rendered unconscious and kept in this condition for an hour with only three ounces of ether, and for the second hour with only two additional ounces.

After the patient has been placed under the influence of the anesthetic agent, and put on the operating table, on which sterilized blankets have been placed in such a manner as to admit of their being folded over the patient's chest and lower limbs, leaving only the abdomen exposed, the bichloride compress, previously alluded to, is removed, and the skin is finally scrubbed with hot water and tincture of green soap. The pubic and umbilical regions should receive special attention. This scrubbing is to be followed by irrigation with sterilized water, ether and alcohol. If the patient is a female, it should be the rule to cleanse the vagina in the same manner, after passing the catheter, but instead of scrubbing the tissues with a brush, it is better to use a piece of gauze, held in the jaws of a spongeholder, as the brush tends to excoriate the tissues, and thereby increases the danger of septic infection.

While the operation is progressing, the anesthetizer, who should be an experienced physician, should watch the patient constantly, and pay no attention to the operation. As soon as the reflexes have disappeared, he should raise the inhaler from the patient's face, to replace it as soon as they return. In this way the patient inhales the minimum amount of ether and carbonic acid gas. As soon as the pulse increases twenty to thirty beats a minute, a stimulating hypodermic injection of strychnine should be administered, and repeated as needed from time to time, until one-twelfth of a grain has been given. To this may be added one one-hundredth of a grain of nitroglycerin, every fifteen minutes. If, in spite of these stimulating injections, the pulse exceeds 150 beats a minute, it is well to open either the right or left median cephalic vein, and introduce into the circulation from one to two pints of saline solution at 120°F. This solution should be made ready in ad-

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vance. For giving such an injection, a simple apparatus, consisting of a rubber tube, with a funnel at one end and a blunt hollow needle at the other, is all that is requisite.

AFTER-TREATMENT.

The operation having been completed, the patient should be returned to his bed, being placed directly within the folds of a blanket, and surrounded, if necessary, with hot-water bags or bottles. Care should be taken, lest they be overheated, and so blister the still partially unconscious patient. This warning is given because it is not at all uncommon, when the matter is left entirely to the nurse, to have the patient receive one or more severe burns from this cause. When hot saline solution is allowed to remain in the abdominal cavity, the patient generally leaves the operating table in good condition, and with a warm, most skin. If the patient's pulse is weak and rapid, it is wise to raise the foot of the bed somewhat. There is, however, little shock, unless there has been much loss of blood during the operation.

During the first twelve or eighteen hours following the operation, it is usually best not to allow the patient anything by mouth, except a little warm water from time to time. If ether has been administered intelligently in small quantities, and in the manner previously described, there will generally be little or no vomiting or nausea. If the demand for fluids is urgent, which is seldom the case when the saline solution is left in the general cavity, it is probably due to gastric irritation, and can usually be successfully combated by two or three large doses of salicylate of bismuth. The patient should, during these early hours of convalescence, be stimulated and nourished, if necessary, by means of saline enemata, unless the operation has involved the breaking up of extensive and firm adhesions in the pelvic cavity, in which case a weak place in the bowels may be ruptured, and the enema and fecal contents of the lower bowel be forced into the general peritoneal cavity. With the passing of these first twelve or eighteen hours, if the patient is not suffering from nausea or vomiting, and the pulse rate is as much as before the operation, a small quantity of equal parts of milk and lime water, or peptonized milk may be given from time to time, until four ounces have been taken. After this there should be an interval of two hours, when four ounces more of peptonized milk may be

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given. The quantity of milk should gradually be increased, and the interval lengthened, until the patient takes eight ounces or its equivalent every three hours, but once during the twenty-four hours the interval should be lengthened to six hours. The general tendency is to give too small quantities of nourishment at too frequent intervals, which fatigues the stomach and is apt to cause irritability of this organ, and engender a disgust for food. During the interval, if the patient desires more liquid, egg albumen and water (the whites of three eggs to a pint of water, to which a little salt has been added), may be allowed him frequently.

The patient should not be required to maintain any one position for any length of time, but may be moved from time to time, in accordance with his desires, first by the nurse, and later by himself, and this permission to change his posture will prove a great source of comfort to him.

During the first forty-eight hours following the operation, if the patient is disturbed by reason of intestinal gas, great relief is often afforded by the introduction through the sphincter ani of a short rectal tube.

If this simple procedure proves inadequate, friction may by applied over and along the colon. This complication, however, will seldom arise if, during the week preceding the operation, proper attention is paid to clearing out the intestinal contents. If the patient continues to do well and retains nourishment, and the intestinal canal has been well emptied, no cathartic need be administered until the third day, when one-tenth of a grain of calomel and one grain of soda should be given every half-hour for five hours. If the bowels do not act within three hours after all the calomel has been taken, a Seidlitz powder should be administered, and repeated after another interval of three hours. After the bowels have moved, if all has gone well, the pulse rate will be as much as it was prior to the operation, and by the evening of the fourth day the bodily temperature should be normal, in which case the patient may be rapidly allowed to resume ordinary diet. The dressings, if all goes well, should be allowed to remain ten days when they should be removed and the subcuticular suture, if one is used, withdrawn, the site of the incision being first washed with hydrozone. After the removal of the suture just referred to, a thin coating of a solution of celloidine in ether and alcohol may be applied to the wound,

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the patient remaining in bed a few days longer, then being allowed to sit up, and soon thereafter to walk about and resume his ordinary occupation.

COMPLICATIONS.

The complications that may be encountered during the period of convalescence, and which change this ordinary peaceful period into a more or less stormy and anxious one for both the patient and the physician, taxing the latter's ability to the utmost, occur in the following order: Hemorrhage, intestinal paresis, peritonitis, intestinal obstruction, and stitch abscesses.

The occurrence of concealed hemorrhage, which fortunately at present seldom happens, especially when the vessels are tied with cat-gut taken directly from the absolute alcohol in which it is preserved, manifests itself during the first twenty-four hours by a rapidly rising pulse, decreasing in volume, and a falling body temperture, dilatation of the pupils, and a clammy perspiration. When this condition is followed by a rapid rise rise of body temperature to 103°F., or over, dissolution is imminent. As soon as this complication is recognized, the abdomen should be at once reopened, and the bleeding point searched for and secured, and at the same time an intravenous injection of saline solution should be given and the patient stimulated by hypodermic injections of strychnia. The decision as to the occurrence of hemorrhage and the necessity of reopening the peritoneal cavity should be made with deliberation, as the unnecessary performance of this operation may seriously endanger the life of the patient.

The advent of intestinal paresis is marked toward the end of the first day by distention of the abdomen and the occurrence of more or less persistent vomiting, the contents of the stomach being ejected without nausea, and the fluid being at first of a yellowish color, but not having a fecal odor. As the color of the fluid darkens, the prognosis becomes less and less favorable. It is well to bear in mind that vomiting resulting from the administration of the anesthetic subsides usually during the first twelve hours, but that it may follow the administration of morphine. When the diagnosis of intestinal paresis has been made, the stomach should be washed out and salines given at frequent intervals until the bowels act, even if the saline is partially ejected by the patient. The writer's

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efforts have been crowned with success in more than one instance by the persistent administration of salines after the patient's condition had seemed hopeless. The stimulating enema already alluded to, should be given and friction applied over the colon. If the bowels act, the patient usually has no further trouble.

The onset of peritonitis is indicated by gradual but persistent rise of pulse, beginning on the second or third day, intestinal distention, and rigidity of the abdominal muscles, whether accompanied by elevation of body temperature or not. If the pulse rate rises and remains in spite of our efforts above 120 a minute, the outlook is generally unfavorable. As soon as this tendency of the pulse to increase in frequency after the first day is recognized, an effort should be made to move the bowels by the administration of calomel, followed by a saline. If this does not act in a reasonable time, another dose of calomel should be given, followed after an interval of several hours by another saline. A stimulating enema of seven ounces of a saturated solution of sulphate of magnesium and one ounce of glycerin is often very effective; If the bowels act freely, our patient ls generally safe, but if the symptoms persist instead of subsiding, a few stitches should be removed from the abdominal wound and the cavity freely irrigated.

Stitch abscesses usually announce themselve by the occurrence of a rise of body temperature toward the close of the fourth or fifth day and should be treated by applications of hydrozone and the removal of all of the sutures. The opening in the skin should, if necessary, be enlarged to allow the free evacuation of the pus.

While the various symptoms described have individually to be considered and their meaning weighed they also have to be considered collectively, and in judging of the gravity of the patient's condition, the facial expression is of the greatest value to those who have had experience. A depressed and anxious countenance generally denotes a grave condition, and a cheerful one, even if accompanied by an elevation of the pulse and temperature, that the condition is not serious. The physician charged with the care of a patient upon whom a laparotomy has been performed should not think too constantly of peritonitis—that bugbear of all who have had little experience with abdominal work, and consequently feed the patient upon salines rather than milk and soups. On more than one occasion

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the writer has known this fear to be the father of the thought, and the patient's life either sacrificed or convalescence needlessly prolonged by this error of judgment.

[55 WEST 36TH STREET.]

True Torticollis.

BY PHIL HOFFMAN, M.D.,

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CLINICAL LECTURER ON ORTHOPEDIC SURGERY, WASHINGTON UNIVERSITY MEDICAL DEPARTMENT; MEMBER OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

TORTICOLLIS, or wry-neck, is practically a rotary-lateral curvature of the cervical spine, and, from the writer's point of view, is but a common symptom of many different pathological states, which represent so many distinct and separate affections that differ widely in their symptomatology, prognosis and treatment, and resemble one another in only a single particular, that of malposition of the head and neck. In many of the so-called divisions of torticollis, even this cervical distortion has but a superficial resemblance. One would not think of calling rheumatic inflammation of muscles, acute inflammation of vertebral joints, osteo-arthritis, tuberculous cervical spondylitis, enlargement of cervical glands, cicatricial contraction of skin, and spasmodic contraction of muscles from nerve irritation, the same disease; yet all of these conditions, and many more, are direct causes of the symptom torticollis. They should be considered as no more identical diseases than are the various intra- and extra-articular, abdominal, pelvic, and spinal inflammations that frequently cause the common symtom of flexed hip. They should be grouped together for the purpose of differential diagnosis only.

There is but one variety of wry-neck in which treatment is directed wholly to the deformity, and in which the deformity itself deserves to be spoken of as a distinct affection. In all the others, treatment is mainly directed toward the pathological state, of which the torticollis is but an incident.

Read before the Bethesda Pediatric Society January 31, 1902.

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I allude to that variety, usually present at birth or soon after, due to permanent shortening of the sterno-mastoid muscle, and in which other cervical structures, by accommodating themselves to the malposition, later contribute to the maintenance of the deformity. This variety, to which I would limit the name of *true* torticollis, will constitute the basis of the following remarks:

The deformity of torticollis, due to contraction of the sterno-mastoid, is one in which the head is inclined toward the side of the affected muscle, and the chin rotated to the opposite side. (Fig. 1.)

The cases to which this paper refers are observed at birth, or in early childhood. Probably many really congenital cases are believed to have occurred after birth, as the infant makes no attempt to raise its head for many weeks, a slight contraction of the muscle may not at first be observed. Later, however, when more attention is paid to the attitude of the child's head, at which time also the deformity has become more marked, the tendency to hold the head to one side will be noticed.

Stromeyer, a half century ago, attributed these to injury of the sterno-mastoid, with formation of hematoma, during delivery. This was followed by scar formation and muscle shortening. This old theory is still much advocated by most writers on the subject. Why injury of the sterno-mastoid should result in shortening, when, as is well known, moderately severe contusion or laceration of other muscles does not, is not explained.

Whitman, in a study directed especially to this point, traced the history of nine children in whom hematoma of the sterno-mastoid existed at birth. None of them were subsequently afflicted with torticollis. Many others, including Jacoby, Smith, and Redard have carefully observed and reported cases in which hematomata disappeared without deformity. It is more than likely that in the comparatively few undoubted cases in which torticollis and hematoma of the sterno-mastoid were coincident, the swelling was due to tearing the already shortened muscle during delivery, and not the cause of the shortening itself. Experiments on rabbits by Miculicz, Witzel and others, in which hematoma of the sterno-mastoid was produced, did not result in muscle shortening. Reliable evidence, almost without exception, indicates that hematoma

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of the sterno-mastoid is very rarely, if ever, the cause of torticollis.

As yet no theory that has been advanced to explain the occurrence of congenital torticollis has been directly proved. Probably the two most plausible are abnormal pressure in utero and arrest of muscle development from obscure, perhaps central, origin. Most authorities agree that the right side is the one far more frequently involved. This has been the writer's experience. Whitman, however, in fifty-eight cases, found the left involved thirty-eight times. Its distribution among the sexes seems to be about evenly divided.

Sometimes little or no change is found in the muscle structure, but usually more or less fibrous degeneration is present; occasionally even to the extent of disappearance of the whole muscle substance and its replacement by fibrous tissue. Fatty changes have also been found. The deformity increases not from additional real shortening of the muscle, but from its failure to grow as rapidly as the tissues on the opposite side of the neck, which makes the muscle relatively shorter than at first. The other muscles and fascia on the affected side, by adapting themselves to the constrained position of the head and neck, become shorter than those opposing. Even the cervical vertebræ in time become wedge-shaped from position and unequal pressure.

Secondary to curvature in the cervical region, occur curvatures of the dorsal and lumbar spine. This lateral deviation of the lower spine sometimes persists after correction of the torticollis.

Asymmetry of the face is an almost constant accompaniment of this affection. Generally present early to a slight degree, it increases with the development of the deformity. It is usually more noticeable after the head has been brought to the median line. (Fig. 2.)

The cranium and face on the affected side are shorter and flatter, and the distance from the outer corner of the eye to the corner of the mouth or point of the chin is less than on the well side; the two eyes and corners of the mouth are not on a level; and the line of the nose is not perpendicular to that of the eyes. The only reasonable explanation of this facial asymmetry is, probably, a smaller blood supply on the affected side, which, to my mind, could be brought about mechanically by crowding of all tissues, including the large

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blood-vessels, in the diminished space on the contracted side of the neck. The theory of lessened blood supply is further supported by the facts that the carotids on the affected side have been found smaller than the opposite, and that after correction of the deformity, the asymmetry usually becomes gradually diminished. Then, too, false torticollis, due to glandular enlargement, cicatricial contraction, etc., when existing long in a growing child, frequently results in the same facial deformity. All this also stands as evidence against the opinion of Golding Bird that it, in common with torticollis, is due to central nerve lesions. The writer fails to understand the theory, so often advanced, of deformity from muscular tension upon the face. When we remember that the torticollis is originally caused by shortening of the sterno-mastoid and that the other cervical tissues merely accommodate themselves to the malposition, it is hard to conceive just how this tension is brought about; a tension sufficient to produce change in the size and shape, not only of the soft parts, but even of the bones of both the cranium and face. Also, the affected side of the face does not present such a deformity as tension would produce, but merely a smallness that might originate from retarded growth. Muscle tension may account for the upward bowing of the clavicle, occasionally present, and which is shown Figures 4 and 5. This could be brought about by the clavicular attachment of the sterno-mastoid pulling upward during efforts to straighten the head.

The affection is a painless one. Relief is sought only on account of the deformity, which is very unsightly, and can not be disguised. Treatment should be commenced as soon as distortion is observed. The primary shortening of the sterno-mastoid, the secondary contraction of the other cervical tissues, the change in the shape of the vertebræ, the secondary scoliosis, and the asymmetry of the face will all become more marked and fixed, the longer treatment is delayed. The earlier it is begun, the more perfect will be the result.

When of slight degree, and seen very early, daily manual correction by the mother or nurse will suffice. This is accomplished by one hand grasping the vertex, the other the chin, and applying gentle, steady force in the direction opposed to the deformity, which should be over-corrected if possible. This should be repeated at frequent intervals during the day, each time holding the head in the over-corrected position for

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several minutes. More resistant cases will require the wearing of mechanical appliances, which either hold the head in position after manipulation or themselves exert a corrective force. Usually, however, mechanical treatment alone is disappointing. Most of the cases, when brought for treatment, are already so far advanced, and the tissues so much shortened, that neither of the mild measures just suggested will be of much avail. Here operation presents the only chance of marked improvement.

As, in the grade of cases requiring operation, all structures on the affected side of the neck have, by adaptation, become more or less shortened, it is manifestly impracticable to cut everything that offers resistance to the correction of the deformity, therefore, division of the sterno mastoid and forcible stretching of the other tissues are resorted to. The muscle is usually divided just above its sterno-clavicular attachment. This can be accomplished either by subcutaneous tenotomy or by open incision Of late years the open method has been gaining favor, and is now advocated by most orthopedic surgeons. The argument advanced in its favor is that one can make a more thorough division of the muscle and contracted bands of fascia, with less danger of wounding important vessels in the vicinity.

Despite this weight of opinion, it has been the writer's custom to perform the subcutaneous operation. While requiring more care and delicacy, it is simpler, and leaves no visible scar. After operation, there is no wound to take care of, and, if to-day such an argument is legitimate, the danger of suppuration is practically nothing. If care is taken to keep close to the muscle, without transfixing it, it can be thoroughly divided, with little danger of wounding important vessels. The feeling conveyed through the tenatome to the fingers will tell the operator whether he is keeping close to the muscle, especially so if a probe-pointed instrument is used in dividing the clavicular portion. That, even in severe cases, the muscle can be thoroughly divided in this way and the operation prove a success, is shown in Figures 1 and 2. Figure 4 illustrates a moderately severe case of torticollis, in which the muscle is made especially prominent by the patient's effort to bring the head straight. Figure 5 shows the result of treatment. The writer will, nevertheless, acknowledge that his preference for this operation probably depends upon the fact that he is used

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to it. He would, by no means, condemn the open method. He will even confess that he never performs the subcutaneous operation, without such instuments at hand and ready for use as would be required for open section, should such, through accident or complication, become necessary.

The technique of the subcutaneous operation is as follows:

FIG. 1.—Severe typical torticollis. See Fig. 2 for result of subcutaneous operation.

The patient, thoroughly anesthetized, should lie upon the back, with the head and neck, which are supported by an assistant, extending over the edge of the table. The operation should be divided into two steps: First, division of the sternal; and, second, of the clavicular head of the muscle. The assistant puts the shortened muscle on the stretch, by drawing the head toward the unaffected side and rotating the chin toward the affected one, while the operator inserts a small, sharp, and pointed tenatome close to the outer side of the sternal tendon, just above its attachment. The blade should be inserted with its flat side in contact with the tendon and should sweep around it, the point staying close to it, until directly back of it. Then the cutting edge is turned toward the tendon, which is divided by a careful sawing motion, from

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behind forward. The blade is then again turned parallel to the tendon, and carefully withdrawn. Some surgeons prefer to insert the knife between the skin and the tendon, and cut in a backward direction. This method is more likely to lead to a wound of the anterior jugular vein, which lies immediately behind the sternal head. In the method first mentioned, care should be taken to insert the blade between the vein and the tendon. It is well to remember the possibility of wounding the common carotid artery or internal jugular vein, by allowing the point of the knife to penetrate too deeply.

FIG. 2.—Same patient as Fig. 1, showing result of subcutaneous operation. Also shows facial asymmetry.

In exceptional cases, after division of the sternal attachment, the head can be readily replaced; but usually it is necessary also to completely divide the clavicular attachment. To do this, it is safer to use a probe-pointed tenatome, which should be slipped behind the full width of the muscle, to its outer border, through the same skin opening made in dividing the sternal head. Here, too, the tenatome should be intro-

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duced flatwise underneath the muscle, and the cutting edge not turned toward it until the outer border of the clavicular head is reached; then the muscle should be very cautiously cut through from its outer to its inner border, from behind forward. Any remaining small contracted bands can be divided by nicking with the tenatome, or they may give way in the after-manipulation. In dividing the clavicular portion,

FIG. 3.—Plaster-of-Paris dressing applied after operation. Note that head is turned in direction opposite to original deformity. Same patient as Figs. 1 and 2.

care should be taken not to wound the external jugular vein, which lies close to its outer border. This vein can usually be made prominent by digital pressure. The muscle has occasionally been subcutaneously divided in its middle portion. This procedure is very dangerous, on account of its nearness to the carotid sheath; Tubby says that he tried it once, but felt so impressed by his happy escape from trouble, that he is not disposed to tempt fortune again.

After both portions of the muscle have been cut, the other contracted cervical structures can usually be stretched

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by manipulating the head in a direction opposed to that of the original deformity. Considerable force may be employed, and the head should be brought as far as possible into an over-corrected position. An assistant should steady the trunk, by bearing on the shoulders, while the operator manipulates the head and neck. This should not be done hurriedly, but the parts alternately stretched and relaxed, until the best possible position is attained. The small wound should be sealed with collodion, covered with gauze, and the head held in the over-corrected position, by means of a plaster-of-Paris dressing, which should include the thorax, neck and head. (Fig. 3.)

It has been the writer's custom to cut fenestræ for the ears, and, in recent cases, to cut away the chin covering. This does not lessen the stability of the support. It is remarkable with what little discomfort the dressing can be worn. The patient becomes accustomed to it within a few days, and I have never heard much complaint, except in one case, where the operation was done in the month of May, and followed by very warm weather. This patient suffered much from heat. Of course, the dressing should be smoothly applied. A very good underdressing, to protect the skin and hair from the plaster, can be made of several thicknesses of ribbed under-vests, drawn over the head and trunk, cut and reshaped at the neck, and cut out for the face.

To perform the open operation, the skin should be cut for an inch or more over the sterno-clavicular attachment of the muscle, which is drawn tense by an assistant. The muscle is then divided upon a director, which is carefully passed behind it. All resisting bands of fascia within reach are also cut through the same opening. When hemorrhage has been checked, and the skin united, the same steps are followed as after subcutaneous section.

In either operation, it is important that the muscle be completely divided, the other contracted tissues thoroughly stretched, and the deformity over-corrected and held so by a plaster-of-Paris or other rigid dressing. Neglect of any one of these principles may lead to an unsatisfactory result.

The plaster dressing is allowed to remain between three and four weeks, when post-operative treatment is begun. This should be continued many weeks, sometimes months. Habit acquired by years of malposition, and adaptation of bone and soft structures to that position, make this very necessary.

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Cases that are skilfully operated upon, and receive no further treatment, often relapse. This will rarely occur, when efficient after-treatment is employed. As soon as the immediate retentive dressing has been removed, the patient should be further treated by daily massage, active and passive movements, and self-suspension in the Sayre apparatus, ordinarily employed to assist in the application of plaster spinal jackets. In those cases, where tendency to return of deformity is marked, retentive or corrective braces may be used.

FIG. 4.—Moderately severe torticollis, showing limit to which it was possible for patient to straighten head. Also shows upward bowing of right clavicle.

Braces that hold the head and neck rigid are certainly not conducive to good muscle development and function, and their long-continued use should be dispensed with, whenever possible. It has been the writer's experience, especially in his later cases, that support is rarely needed after the first dressing has been removed. Even severe contractions, as shown in Figure 1, have done well without it. This has probably been rendered possible by thorough muscle division and extreme over-correction at the time of operation.

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The patient is instructed to actively carry the head to the greatest possible extent in the direction opposed to that of the original deformity. The nurse should also manipulate it in the same direction, using as much force as possible, without causing the patient much distress.

The frequency with which both the active and passive correction should be employed is limited only by the time at the disposal and the endurance of the patient and nurse. These movements are especially efficacious, if employed in connection with and during self-suspension.

FIG. 5.—Same patient as Fig. 4, showing result of subcutaneous tenotomy.

What becomes of the severed sterno-mastoid muscle? Does it lose its function after being cut? In the rare cases, where degeneration of the entire muscle substance has taken place, it certainly will have no more function after than before operation, at which time it was acting only as a fibrous cord. Usually, however, sufficient healthy muscle substance remains to permit of its being converted into a useful organ, if the cut end can find a point of attachment from which to act. This is ordinarily accomplished by new material growing into the gap and uniting the cut ends, but the writer wishes to record here an observation made upon three cases in which the mus-

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cle, though retaining its function, had apparently not united with the lower piece, but had become attached by its free end to the fascia higher up, from which new attachment it exerted a pull upon the head.

The Successful Treatment of Endometritis and Ulceration by the Use of the Intrauterine Medicator.

By SAMUEL L. KISTLER, M.D.,

LOS ANGELES, CALIFORNIA.

I DESIRE to call attention to the treatment of certain cervical and intrauterine diseases or conditions, by the use of certain medicaments, constantly applied by the use of the intrauterine medicator or pessary.

You all know the trouble experienced in some cases of endometritis, and have, no doubt, wished for some mode of treatment more successful than iodine, carbolic acid, kerosene, boracic acid, icthyol, europhen, etc., as ordinarily applied.

As is plainly to be seen, the trouble has not always been with the agent employed, but rather on account of the way in which it has had to be exhibited.

What I claim for this mode of treatment is :

1. It is a simple scientific advancement over the use of ordinary means.

2. Its employment insures constant practical application of the medicament used.

3. It is clean, antiseptic, and rapid in its effect.

4. Its construction is based upon the anatomical shape of the normal canal.

5. As a dilator it is of incalulable value in dysmenorrhea.

6. It is easily removed and reinserted, needing only occasional attention.

7. Physicians desiring, can instruct the patient in the use of the instrument.

8. It insinuates itself between the walls of the uterine canal, and thus brings every portion of the surrounding mucosa in contact with the medicament.

Read before the the Academy of Medicine, Los Angeles, California.

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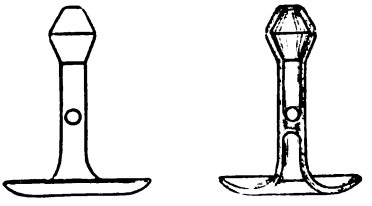
9. Its use reduces to a minimum the likelihood of further diseased conditions arising.

10. It is constructed in various sizes, to conform to the various cases.

11. By its use such treatment as is indicated may be used for the purpose of keeping the mucous membrane in a healthy state.

The instrument is constructed as follows: It consists of a base, stem and head. The base is circular, with smooth edges. The stem is hollow from point of transverse perforation to outlet in top of head. The bulb is hollow, and of same contour as outside, in order to hold as great an amount of medicament as possible.



INTRAUTERINE MEDICATOR.

The instrument may be made of hard or soft rubber, aluminum, silver or other suitable material, and of such length and diameter as to meet the indications in any particular case.

The mode of treatment is adapted particularly to certain conditions affecting the cervical endometrium, and is of great value in flexions and contractions of the cervix. Indeed, I know of no agent comparable. Its use is far-reaching in all conditions where a continuous application of medicament is desired—providing it is tolerated.

The use of the instrument requires only the care and prudence of reasonable skill in order to make its use sovereign in conditions to which it is adapted.

The medicament should be used according to indications as will occur to you on first thought, *i. e.*:

1. For sedative effect.
2. For neurotic symptoms that exist or arise.
3. For inflammatory states.
4. For tonic effect.
5. For stimulating effect.

The conditions in particular to which it is adapted may be briefly numerated as:

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1. Endometritis, both simple and chronic.

a. Simple, when associated with slight metritis.

b. Chronic, when complicated with slight salpingitis or other periuterine inflammatory conditions.

2. Hemorrhage and fungoid endometritis.

3. Catarrhal inflammation of endometrium.

4. Chronic endometritis of cervix, with erosion.

5. Indurations and unhealthy granulations of cervix, with erosion.

6. Edematous tissues.

7. Chronic uterine hyperplasias, with large, soft edematous condition, sensitive to pressure, and easily bleeding.

8. Retroflexion and other conditions, either of which can be treated from description, before given.

In order to treat conditions named successfully, it is necessary to follow the lines above noted, and, where required, to dilate and render the canal patulous for drainage—to soften and absorb exudative depositions and meet such other requirements as the case may call for.

There should be no comparison made as between this treatment and the use of the old class of intrauterine stems or pessaries.

This instrument applies the medicine evenly and continuously, bathing the entire mucous membrane between the opening in the head of the instrument and perforations in the stem, between which openings a continuous circulation is kept up by reason of the action of the mucosa surrounding it.

The medicament used is forcibly inserted into the hollow bulb and stem of the instrument in order to fill it completely, after which it is inserted.

A physician can use his own judgment as to the medicine to be used, whether boracic acid and cocoa butter or argentum citrate, icthyol, or any other medicine. I prefer europhen, boracic acid or aristol, as a rule.

The instrument may be allowed to remain for a period extending from a few hours to a week or more, depending upon the existing conditions and needs for medication.

Sterility, when due to contracted internal os, is curable in many instances by the use of the intrauterine stem, which should be kept in place between two or three menstrual periods, being withdrawn only at the beginning of each period so that impregnation may take place—for this is impossible if

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the stem remains *in situ*. This is a point upon which it is important not to enlighten the laity for reasons which are self-evident.

The use of the short stem is recommended in all cases in which the trouble does not extend into the body of the uterus.

The long stem is necessary where the trouble extends well into the organ and where a flexion is to be remedied, or stenosis of the internal os exists.

It is a well-known fact that conditions such as are produced by continued menstrual pain will interfere finally with the flow, and cause endometritis, which in time may become far-reaching, producing inflammation not only of body of uterus, but possibly of tubes and ovaries—a class of cases now very prevalent.

After determining the necessity of using the instrument, you will demonstrate the condition of the canal, and if it offers no objection, you will place the instrument to be used in the canal so that the base fits closely against the cervix.

Should examination show a contraction or flexion, it will first be necessary to straighten the canal and make it of sufficient caliber to admit the size of instrument you desire to use.

The patient should be instructed to repeatedly examine herself dnring the first few days following the introduction of the stem to insure its remaining in place, provided it is tolerated, for then if it is disposed to come out, she may properly replace it.

[3146 VERMONT AVENUE.]

Complete Transposition of Viscera: A Report of Three Cases.

BY W. C. MARDORF, M.D.,

ST. LOUIS, MO.

THE case which led to this report was that of a young man, aged 22 years, small of stature, but well developed, weighing 130 pounds, whom I was called to see at 11 o'clock a.m., October 3d of this year. I was told his bowels had not moved for five days, during which time he

Read before the Medical Society of City Hospital Alumni, October 17, 1901.

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had pains in the lower abdomen, at first slight, and afterwards increasing and spreading over the entire abdomen. He had been vomiting during this time, but the vomitus was simply what he had taken into the stomach, and occasionally bile.

He had been seen by a physician the day before, who endeavored to move the bowels with heroic doses of castor oil and other purgatives, and failing in the attempt, relinquished the case with a fatal prognosis. On examination of the abdomen, I found it distended and tympanitic, with a somewhat muffled percussion note and slight though plainly perceptible thickening or increased resistance in the left inguinal region. Examination was painful, but not extraordinarily so.

Assuming that the case was one of peritonitis of unknown origin, but most probably caused by some obstructive trouble of the intestine, located in the left lower quadrant, such as a volvulus or the like (I could not satisfy myself as to the condition), I took up his general condition, and found it so bad as almost to contraindicate operative interference. A pulse of 130 and poor, and a temperature of 96.8°F., breathing rapid and shallow, together with a pinched, anxious face and cold grayish skin, all warned that if anything was to be done, it must be done soon. Postponing further examination, I advised his removal to the City Hospital for operation, which was agreed to. He was immediately taken there, and at 4 p.m. laparotomy was performed, Dr. Nietert operating. On incision the abdominal walls were edematous, and the cavity, on being opened, revealed a severe general peritonitis of some days' standing, with some pus in the dependent portions, and adhesions between the coils of intestine, which were covered in places by a thick, fibro-purulent exudation. There were necrotic patches along the small intestine, where the inflammation was most severe, but the source of the trouble was finally located in a necrotic and leaking appendix, which was found in the left iliac fossa, and not walled off by adhesions from the general peritoneal cavity, but hanging free.

Further examination showed the sigmoid flexure and descending colon to be on right side, the pylorus on the left, and the esophageal orifice to the right side. The greater lobe of the liver was to the left, in fact, all the non-symmetrical organs within reach were found transposed. The appendix was removed and stump inverted, the cavity cleansed as well as possible; the patient's condition had failed during the

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operation, and in spite of all efforts no reaction occurred afterwards. Death took place about six hours after operation. A post-mortem examination was held, at which I was not present, when it was found that all the nonsymmetrical viscera, such as heart, lungs, liver, spleen, pancreas, stomach, and intestines were regularly transposed, but otherwise perfectly formed. The specimen is here for inspection.

I also take the occasion to present a little girl, aged 11 years, with a like condition, whom I have had under observation for some years, and who is here for examination. She has had a cough since her birth, being never free from it, with recurring attacks of bronchitis in winter, and considerable anemia. Within the last two years her general condition has improved. She seems fairly well-nourished, as you can see, and the cough is occasional and slight, but still present. I can not connect the transposition of the organs with any ill health she has had, even with the cough she has had all her life; it would be difficult to trace the connection. In this case the position of the heart, liver, and spleen can be readily outlined.

I am sorry that I can not present another subject of the same variation from the ordinary, whom I saw some three years ago, but of whom I have lost all trace. It was a strong boy, aged 17 years, who came to me for treatment of an accidental injury. He seemed to be in good health, and assured me he had never been very sick, though somewhat weakly in his early years; what attracted my attention most was the slightly greenish tint of a very dark skin. He said he had always had this color, and there were no symptoms of illness connected with it. I could not detect any abnormality of the heart or liver, save for the transposition, though the former organ was probably responsible; both seemed to be functionating properly, and I wish I could have presented him to this society, as much because of the color of the skin as of the displaced viscera.

The literature that I have found bearing on the etiology of this condition has been very scant, and with reason, for not only is this deviation a comparatively rare occurrence, but it is undoubtedly caused by forces or influences operating in the earliest development of the embryo, a field of research which is extremely difficult and almost closed to investigation, because the means thereto are at present lacking.

When we ask why all the non-symmetrical organs are

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transposed in these cases, we are first forced to inquire why it is that these viscera, such as heart, liver, lungs, and others are placed as they normally are; why the heart and spleen to the left, the liver to the right? Why not evenly balanced? A difficult stumbling-block! We can only say that the ordinary condition is normal, and any other abnormal, though not necessarily prejudicial to health, if regular. Several theories have been put forward, and, among others, von Baer quoted by Fisher, in Woods' "Handbook," offers the following as a part of his theory: "The embryo of a bird during the first 36 hours lies with its abdominal surface downwards; but in the course of the third day of incubation in the egg of the common fowl a change of position occurs, so that the left side of the embryo comes to be laid on the adjacent surface of the yolk." In rare instances, von Baer, having noticed in the eggs of birds and in the ovum of the pig, the embryo lying with its right side to the yolk, he was led to believe this to be the explanation of transpositions of the viscera. "Ingenious as this hypothesis is," comments Fisher, "it is unfortunately wanting in proof, and does not appear to explain the absolute reversion, or right and left symmetry, such as we see in the double organs; as in the hands and feet, the hemispheres of the brain, and other parts."

Of the several hundred cases of transposition on record, it is probable that many were not complete, but were rather malformations, and due to arrests of development.

Among the cases cited by Fisher, the following are the more remarkable:

Baillie's case, a man, aged 40 years (in dissecting room), complete transposition of thoracic and abdominal viscera. In this case six distinct spleens were found, all supplied by branches of the splenic artery.

Young's case of complete transposition, a lady who lived to the age of 85 years.

Hickman's case lived to the age of six weeks. "The lungs, liver, stomach, and spleen were all completely transposed." "The heart, though to all intents and purposes transposed, yet actually occupied its usual position and direction in the thorax."

Hickman's case, a woman, aged 22 years, diagnosis confirmed by autopsy. Heart, aorta, and stomach to right, liver to left; nine small spleens.

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LEADING ARTICLES.

THE TREATMENT OF PUERPERAL ECLAMPSIA.

By A. Derivaux, M.D., St. Louis, Mo.

In his recent thesis, Dr. H. Pâris has described the treatment of puerperal eclampsia as it has been carried out for some time in the hospital wards of Professor Porack at the Maternity of Paris. This treatment combines blood-letting, saline subcutaneous injections and rectal douches. The results must, to be appreciated, be compared with those of its component parts used singly.

In a first series, purgation, blood-letting and a variety of hypnotics, such as chloroform, chloral, etc., were used, with a mortality of 27 per cent in fifty cases.

In the second series, artificial serum, hypodermic injections, were alone used, with a mortality very much like the preceding one—26.84 per cent in forty-one cases.

In the third series, by combining blood-letting, hypodermoclysis and enteroclysis, in forty-seven cases the mortality fell to 6.38 per cent; this spendid showing would be still better had not a few cases been included that were doomed to certain death.

Following is the *modus operandi*, unless some special counter indication exists, there will be some difference according to whether the patient is in the prodromal stage or in the eclamptic state. In the first case begin with rectal douching, then draw about 300 grams of blood. It goes without saying that an absolute milk diet must be enforced.

In the second case, no matter what the form of seizure or its intensity, whether visual, gastric or cerebral, begin immediately with the following treatment:

1. A copious blood-letting (400 to 600 grams).
2. A hypodermic of 1000 grams artificial serum.
3. Rectal douching repeated until flow of bile is secured.

What are the results? With few exceptions the spells become shorter and farther apart, the tension of the pulse is lessened, the kid-

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neys become active, visual symptoms are less marked and the general condition is in every way improved. In some cases seizures reappear after a more or less long delay; in one observation, for instance, blood-letting had to be repeated three times, hypodermoclysis three times and rectal douching seven or eight times; after each of these some improvement was noticeable and finally the patient was dismissed from the ward cured, although her convalescence had been crossed by a dangerous complication (bronchitis).

The rectal douching is so important that additional explanations will not be amiss. When properly carried out it ought, after a few quarts have been injected, bring out an abundance of fetid stools; then, after the injected fluid has come away clear, it begins to be bile colored and pretty soon a regular flow of almost pure bile follows, after which the liquid becomes clear once more; the douching should then cease.

The bile flow, acting as an intestinal antiseptic, possesses considerable therapeutic value. It is best to place the patient in the obstetrical position, hips elevated, to facilitate the issue of intestinal gases; the fountain syringe at an elevation of not more than two feet over the patient's level so as to secure gentle pressure—a return-current canula is to be preferred. The douching in case of constipation ought to be commenced with a purgative solution of about two quarts (citrate of magnesia or sulphate of soda); after its expulsion inject from ten to twelve quarts of tepid water containing chloride of sodium, 0.7 per cent. As soon as bile begins to flow use simple boiled water, keep it up until no more bile is returned even though forty quarts had to be used and the douching takes up an hour's time.—Translated from *Journ. de Med. et Chir.*, December 10, 1901.

TOXINS FROM DIGESTED BLOOD.

It was Bunge, who a few years ago precipitated a sharp discussion on the assimilibility of the inorganic iron preparations. He asserted that these compounds are not absorbed and can not be utilized by the digestive apparatus in the construction of hemoglobin. This controversy is still very fresh in our minds; suffice it, therefore, to state that his contention has been abundantly disproven, and the value of the inorganic salts of iron can not be denied.

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But it was on the erroneous conclusions of this chemist and his students that certain pharmaceutical chemists manufactured pharmacal preparations, the basis of which was an organic iron compound. Many of these products contain extracts of blood or hemoglobin. These medicines have a wide circulation, and they have been clinically tested in many diseases, so that the general conclusion seems to be that they replace the iron preparations, and in some cases have distinct advantages. But, unfortunately, while all the evidence is positive, no untoward results have been recorded, though it is possible that in many instances they have failed to relieve, or perhaps, even aggravated the diseased condition.

A very interesting contribution which bears on this subject has been made by Grawitz. He has found that a white granular degeneration of the red blood corpuscles follows a gastric hemorrhage; on the other hand, this change in the blood was not observed in moderate external hemorrhages. An inquiry into this peculiar and unexpected phenomenon leads him to suspect the production of a toxin from the blood in the alimentary canal. In the process of digesting blood a toxic substance is formed which has a decided plasmotropic effect.

By way of explanation, plasmotropic effect means the destruction of the red blood corpuscles in the liver, spleen or bone marrow, by a process of degeneration and disintegration. Plasmolysis is the solution of the hemoglobin in the blood by some toxic substance, causing hemoglobinemia and hemoglobinuria. This digested blood favors the destruction of the blood in the liver and other organs. As a typical example of a plasmotropic poison, lead may be cited. This element when introduced into the blood for a long time causes a great anemia from an increased destruction of the red blood corpuscles. Chlorate of potash would rank among the plasmolytic poisons.

Now, according to the author mentioned, the digestion of blood produces a substance which has a plasmotropic effect on the corpuscles. In order to demonstrate this, various organic preparations of iron, mostly formed from blood, were administered to persons for several days, and the blood examined. It was found that in the strong healthy men little or no plasmotropic effect on the blood ensued. But the result was different in weak chlorotic girls. Here the degeneration of the red cells was unmistakable. The remarkable deduction is consistent, that these preparations are harmful in anemia and chlorosis.

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But this is certainly not borne out clinically, although, of course, no exact data are at hand. It is often only too true that these iron preparations fail in cases in which they seem indicated, but that they should really be toxic and actually harmful was not expected, but such is the rational conclusion from the experiments mentioned.

Bovine blood has been highly recommended in many anemic conditions, it has been extensively administered, particularly in tuberculosis, but it is new that anemia should result as a consequence. We know of no clinical facts to warrant such conclusion.

But this author makes some more astonishing suggestions. It is well known that grave anemias follow the presence of certain intestinal parasites, as the bothriocephalus latus and the uncinaria (anchylostoma) duodenalis. This anemia is more extreme than can be accounted for by the loss of blood. He suggests that the repeated small hemorrhages may serve as a constant food tor the manufacture of this plasmotropic toxin. In this manner may be explained the excessive destruction of the blood.

It was not determined whether more poison was formed from the patient's own blood or from some foreign blood.

This will be considered as a very interesting speculation until theses facts have been corroborated or refuted.

EDITORIAL COMMENT.

The Formation of Bile Pigment and Bile Acids.

Problems in physiology are always of general interest, and this is particularly true of all investigations which serve to elucidate the functions of the largest gland in the body—the liver. Now, it has been generally believed that the liver has certain definite functions, one of which is the secretion of bile. The biliary acids and pigment have been intimately associated with the activity of liver cells; in fact, it was believed that one of the specific functions of these cells was the formation of bile. But experiments made in the Pepper laboratory of the University of Pennsylvania by Croften go to prove that bile is not formed by any vital activity of hepatic tissue. He has formed bile outside of the body from hemoglobin by a chemical process, and be-

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lieves that bile is formed in various parts of the body. He has isolated a ferment from the liver, which he demonstrated to be identical with trypsin. This ferment produces bile from hemoglobin, and he asserts that it is the presence of this ferment in the liver that causes the formation of bile.

These experimental researches are very interesting and should be pursued with energy, but it is questionable that this view will be adopted for a long time. Since trypsin is the proteolytic ferment of the pancreatic juice, a gastric hemorrhage, or the ingestion of blood should cause an increased formation of bile in the intestine. Some experimental research along this line would be very valuable.

Lecithin in Medicine.

That phosphorus is a necessary element in all nutritive processes is a well established physiologic law, and this fact has been used as a basis for a great variety of therapeutic efforts. It was supposed that the administration of phosphorus is necessary in certain nutritive disorders, and clinically certain therapeutic indications were formulated. As in the case of iron, quite a controversy arose as to the most beneficial chemical compound of this element, which, when administered, would be the most readily absorbed and assimilated. On the one hand, pure phosphorus in solution and emulsion had its advocates, while on the other, this element in its free state was pronounced an irritating poison without therapeutic value. Kassowitz to this day recommends phosphorus in rickets. Then the phosphids, hypophosphites, phosphites, phosphates, and pyrophosphates received the indorsement of various clinicians.

When it was discovered that in organic combination, phosphorus occurs in the form of a phosphate in a glycerin radical, the glycerophosphates were manufactured and recommended in nervous and nutritive disorders.

The latest preparations recommended are the lecithins. These bodies are natural constituents of the nervous tissue. They exist in the yolk of egg and in certain vegetables. Chemically it is a compound of glycerin and neurin, with phosphoric acid. It occurs in the yolk of the hen's egg in the strength of about 5 per cent.

Several preparations of this substance are now prepared for phy-

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sicians' use. But it is still necessary to prove whether these preparations have any advantage over the substance in its natural state. It is as yet inconceivable why pure lecithin should be more readily assimilated, then the lecithin in combination as it exits in the yolk of egg or certain vegetables. Hence a diet composed of milk and eggs will probably supply all the lecithin that is required, and the indication for the pure chemical would be in those cases in which these foods are not properly digested.

The Treatment of Placent Previa by Cesarean Section.

It is undoubted that many cases of placenta previa present a very grave condition for both mother and child, and with the ordinary methods of treatment the mortality is high. Hence many obstetricians have been recommending that this condition be treated by Cesarean section. The arguments advanced were, that this is comparatively a safe operation, and that the life of the child may thus nearly always be spared.

This sanguine expectation was, of course, based entirely on theoretical data. Very few cases have been treated by this method. Ehrenfest (*American Medicine*) opposes this method of treatment. In studying the cases treated by section, he finds a high mortality of the mothers and a still higher death rate among the infants. One reason for the poor results is the fact that these mothers were repeatedly examined, and thus the liability of infection was greatly increased. He claims that the mortality of Cesarean section is about 19 per cent, while that of placenta previa is less than 4 per cent. He is, therefore, emphatically opposed to this operation in placenta previa.

This is another instance where major surgery enthusiastically recommended has not received the expected confirmation in actual practice. It is not long since capital surgical operations were recommended in puerperal septicemia, which now have been supplanted by more rational and less drastic measures.

The Glycolytic Ferment.

It was Lepine who who first suggested and elaborated a beautiful theory, which promised to solve the vexed question of normal glycolysis, and subsequently the still more important question of glyco-

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suria. The hypothesis stated simply was that oxidation of glucose could only take place in the presence of a ferment, since, in the absence of the proper temperature, ordinary chemical oxidation was impossible. This glycolytic ferment must be secreted by some organ and passed into the blood stream. It was suggested that the pancreas was probably the organ which by internal secretion might supply this enzyme. Certain pathologic conditions lent support to this view, as it is well known that certain diseases of the pancreas are associated with diabetes. Then total extirpation of the pancreas in animals invariably causes glycosuria. Certain cells of this organ were supposed to have this function (Islands of Langerhans).

Recently Bendix and Bickel carefully discussed this subject, and conclude that the evidence upon which the presence of this ferment is based is inconclusive, and the theory must be considered an interesting speculation.

It is with great regret that we see our cherished theory demolished, meanwhile we have the sad consolation that nothing is known as yet concerning the oxidation of sugar.

DIAGNOSTICS.

How to Introduce the Stomach Tube.

Knapp suggests the following procedure.

The patient is seated in an ordinary chair. The physician stands at the right side, putting his left arm around the patient's neck. Thus our arm gives the patient an agreeable support to his back, and we have the most robust patient entirely under our physical control. We then attempt to introduce the tube, which has previously been immersed in water. With our left arm around the back of the patient's neck, we hold the proximal end of the tube between the thumb and index finger of the left hand.

The distal end of the tube—that part of the tube which goes into the stomach—is now taken between the thumb and index fingers of the right hand, in the manner in which we hold a pen, and is introduced into the patient's mouth, which must not be opened any wider than necessary, letting the tube pass all the time between the flexed third and fourth fingers of the left hand. As soon as we believe the tube to have reached the posterior wall of the pharynx, we tell the

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patient to swallow and keep on breathing deeply. The tube is now fed into the stomach.

It is not necessary to have the patient protude his tongue, or place our finger, as a guide, into the patient's mouth. Cyanosis of the patient need not alarm us, as it is due to a momentary cessation of respiration, caused by the effort to expel the tube.

Another Sign of Epidemic Influenza.

Kolipinski (*Med. News Jnuvel,*) describes a peculiar appearance of the soft palate which he believes to be a pathognomonic sign of epidemic influenza; it is constantly present when general symptoms are marked. The sign consists of small convex projections of pearly whiteness or transparency upon the mucous membrane of the soft palate. They are about the size of a grain of sand; they may be few or abundant; on rubbing them a hard sensation is obtained; a strong light is necessary to see them. They are entirely devoid of sensation.

Signs of Impending Perforation in Typhoid Fever.

Cushing has called attention to the pre-perforative stage of typhoid fever, the symptoms of which are chiefly abdominal pain, tenderness, and leucocytosis. Kinnicutt (*Medical Record*, December 7) has often been able to detect another sign, which may be heard if the abdominal respiratory movements are not arrested; namely, fine peritoneal crepitation, very similar to that heard over an inflamed pleura. A very careful auscultation of the abdomen should be made in suspected cases.

Diagnosis Between Acute Appendicitis and Some Atypical Cases of Typhoid Fever.

There is a strong possibility of mistaking a case of typhoid fever in which abdominal pain is a conspicuous feature of onset, for an acute appendicitis. The differential diagnosis is extremely difficult at times, and even the best diagnosticians will make mistakes. Richardson (*Boston Medical and Surgical Journal*) reports several cases. It is essential to give each symptom or group of symptoms as accurately as possible its real value. A correct appreciation of them can be gained only by a large experience. Four symptoms have especial weight: Pain, tenderness, muscular rigidity, and fever. The absence of any of these symptoms throws doubt upon the diagnosis of peri-

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tonitis, and, therefore, upon every lesion in which an infection of the peritoneum must needs be present. If there is pain, tenderness and fever, without rigidity of the overlying muscles, peritonitis about the appendix is excluded. When typhoid fever is suspected, one or more unusual combinations of the four symptoms mentioned will prevail. In the absence of a single symptom, the whole history must be carefully studied, the patient must be carefully examined, and the blood must be examined. It takes all the symptoms mentioned to make a surgical diagnosis, and in the absence of any one, an explanation other than appendicitis must be sought.

The Recognition of Suppurative Pericarditis in Children.

More mistakes are made by the practitioner in the diagnosis of pericarditis, than in any other affection. The presence of suppurative pericarditis is usually overlooked. Batten (*British Medical Journal*), asserts that the only suggestive symptoms are a very rapid pulse and syncopal attacks. Physical exploration is unsatisfactory. As a rule, the area of dulness is not enlarged, and murmurs are absent. The syncopal attacks are characterized in the infant by lividity of the lips, tachypnea, and a moribund appearance. The affection is nearly always secondary to some other disease; as measles, pneumonia, brochitis, etc.

A New Sign of Pregnancy.

The first and most important sign of conception are certain changes in the circulation of the internal generative organs. The bluish discoloration of the vagina and cervix are well-known signs. A characteristic stripe, red in color, on a faintly livid background, is noticed in the region of the urethra on the outerside of the tuberculum vaginæ, running transverse or diagonally.

Another sign is the increased resistance of the red corpuscles to hypisotonic solutions. The cells are much less easily changed (that is, swelling, loss of coloring matter, etc.), by a salt solution slightly above or below an isotonic state.

A Sign of Impending Labor.

Schaeffer (*Centralblatt f. Gynikologie*) calls attention to a peculiar reaction of the blood which he has noticed during pregnancy. If blood is stained with a solution of iodin and iodid of potash in water, it will be noticed that certain blood corpuscles are stained very deep,

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while others faintly. In normal blood the ratio of the dark to the pale corpuscles is as 2.5 or 5 to 1. In pregnancy this relation gradually increases, from 5 to 1 upward.

In the first and second month, 5 to 1; third month, 6 to 1; fourth to sixth month, 12 to 1; seventh month, 21 to 1. In a case the relation dropped suddenly from 21 to 1, to 1.6 to 1, and was followed by labor in two days. While the author does not hold this sign to be positive, still it has a great value when taken in connection with other signs.

Jacksonian Epilepsy.

The cerebral localization in cases of Jacksonian epilepsy has been usually referred to the Rolandic region; recently, at the Academy of Science, Paris, it was pointed out that excitation of other areas may incite similar symptoms. The convolutions immediately in front or behind this region may, on irritation, give rise to convulsive movements. Certain frontal convolutions may also produce these symptoms.

The Determination of Renal Insufficiency.

It has been questioned whether cryoscopy and the employment of methylene blue and of phloridzin represent any real advance in the clinical diagnosis of renal insufficiency. KISS (*Berliner Klinische Wochenschrift*) is not enthusiastic over their value. Normal reactions are sometimes obtained in diseased kidneys, and other disorders beside renal disease may cause changes in the urine. A temporary diminution of renal function does not mean much.

THERAPEUTICS.

In Charge of
W. L. JOHNSON, M.D., and A. LEVY, M.D.

Superheated Dry Air in the Treatment of Localized Infective and Septic Diseases.

Burwash (*Chicago Medical Recorder*, December, 1901) has treated acute diseases, as pneumonia, pleuritis, appendicitis, and osteomyelitis with hot air, ranging from 250 to 400°F, applied over region affected, and gives the history of a number of cases favorably influenced by this measure. He believes that, in appendicitis, the mild cases are cured and prevented from terminating in abscess, while in

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the fulminant cases the micro-organisms are so debilitated that the toxemia resulting from them is arrested and the condition of the patient so improved from the destruction of the bacteria, that the operation, when it is done, is robbed of its terrors. The hot air, he contends, stimulates the superficial circulation, and since the micro-organisms may be found in the vesicles of the skin, he believes they are susceptible to the action of high temperature; and furthermore there is produced an increase in leucocytes, consequently an increase of bacterial destruction.

Rectal Alimentation and Medication.

Armstrong (*Cincinnati Lancet Clinic*, November, 1901) recites the case of a patient with gastric ulcer, who was kept comfortably fed by rectal injections for twenty-eight days, tolerance soon being established for one-half to two and one-half pints of fresh milk, containing the white of two or three eggs. This was given every four to six hours, being applied above the sigmoid. The patient, of his own counsel, then resumed oral feeding, and for nine years has been troubled but little with stomach distress. [Nothing is said of peptonizing the milk. We believe this a necessary procedure to obtain anything like full absorption.]

Treatment of Chronic Bright's Disease by Static Electricity.

Neiswanger (*American Electro Therapeutic and X-Ray Era*, November, 1901) treated fourteen cases, diagnosed by experts in urinalysis and microscope. The treatment was by static electricity alone, as follows: Negative head breeze for fifteen minutes followed by positive insulation fifteen minutes. No medicine. All cured!

Treatment of Tuberculosis in Infancy and Childhood, with Special Reference to the Use of Guaiacol.

Rachford (*Archives of Pediatrics*, December, 1901), after laying stress upon diet and hygiene, takes up the medical treatment, calling attention particularly to guaiacol inunctions, one level teaspoonful of the following to be rubbed into the chest at bedtime each day:

℞ Guaiacol..... ʒj
Lanolin..... ʒij
Lard..... ʒv
M.

This has been used for eight years in almost every case of tuberculosis in infancy and childhood, and his experience has convinced

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him of its great value. That guaiacol is valuable as an inunction in the young and not so much in the adult, is due to the tuberculosis being frequently of the lymph nodes in the former, and further, their lymphatic and glandular systems are more active. Tubercular peritonitis is also favorably impressed by this treatment.

Cocaine Antidoting Morphine.

Barnes (*Philadelphia Medical Journal*, December 21, 1901) gives the history of a girl, aged 17 years, who was profoundly poisoned from inhaling morphine sulphate while moulding tablets. All other means failed (atropin not used), so that practically moribund, she was injected with one-half grain cocaine. In ten minutes after a second injection the effects of cocaine were noted, the pulse and respiration increasing, and signs of consciousness returning. A third injection of one-fourth grain was given with pronounced results, and a little more, cocaine poisoning supervened; this, however, was not alarming. The patient recovered from both poisons, but a typhoid state kept her confined at St. Agnes Hospital for five weeks. The author emphasizes that "it is, therefore, evident that the primary effects of toxic doses of cocaine are directly antagonistic to the late effects of toxic doses of morphine."

Aspirin.

This derivative of salicylic acid is reported upon favorably from time to time. Coverly (*Therapeutic Gazette*, November, 1901) believes it to be the most eligible remedy for rheumatic affections. It has, moreover, a marked antineuralgic effect. The advantages claimed are freedom from irritating effects upon the stomach, little or no tinnitus, and no depression. The dose is from ten to fifteen grains several times daily.

Quinine in Malaria.

Some points from the the essays in the *New York Medical Journal*, December 7, 1901:

Quinine in pill form is uncertain in action.

In giving quinine by the rectum, the bowels should be previously washed out, and it may be necessary to combine a little opium. Inject slowly and well up into the bowels.

In intermittent fevers, a few ordinary therapeutic doses are suf-

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ficient to break up an attack, but the fever usually reappears about the end of the eighth day.

A solution of seven grains of dihydrochlorid of quinine in thirty minims of water may be injected deep into the glutæi. Another way is to give the following hypodermically, first taking the following precautions: (1) Filter and sterilize the solution by boiling. (2) Sterilize skin and syringe. (3) Inject deep.

℞ Quinine sulphat..... 15 grs
Tartaric acid..... 8 grs
Distilled water..... $2^1/_2\overline{3}$

Sometimes the hepatic function must be stimulated. For dysentery complicating malarial infection, a pill composed of blue mass, one grain; ipecac, one-half grain, and opium, one-half grain, two or three times daily, is sufficient. During the chill, hot drinks may be given freely. In the hot stage, cold acidulated drinks. (Beling.)

[For the chill we use thirty drops of chloroform, well diluted. The hydrochlorid of quinine may be used hypodermically, dissolving as much as eight grains in twenty minims of water by boiling, permitting this solution to cool to the body temperature, and then injecting. This is less irritating, in our experience, than the sulphate or dihydrochlorid.]

Never give quinine on a rising temperature, except in fulminant cases. (Griggs.)

The prevention of malarial infection in a malarious locality, I attempted, in the early days of practice, by the administration of five grains of quinine in a cup of coffee, before the patient left his house in the morning. (Egan.)

Twelve Cases of Pneumonia Treated by Antipneumococcus Serum.

Sears (*Boston Medical and Surgical Journal*, December 12, 1901) treated 12 cases of pnenmonia with the serum. An extension of the process after the use of the serum was noted in three cases. It certainly did not relieve the pain from the inflamed pleura in one case. Sears can not ascribe any distinct benefit to the serum, but believes no ill effects other than what may occur from diphtheria antitoxin were manifest.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of November 7, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

DR. F. REDER presented a specimen of

Sarcoma of the Testicle.

The growth, he said, presented none of the characteristics of malignant tumors, the principal features entering into diagnosis of malignancy being the age of the patient and the rapid growth of the tumor. The patient was 72 years of age and had always enjoyed good health, nor was he sick at the time the growth manifested itself; it was discovered accidentally when he was bathing. His general health continued good and he refused to consult a physician. It was a growth that might have been considered tubercular or syphilitic, but both of these factors were eliminated. The patient finally consented to an operation, and the testicle was removed; it is the left testicle. On microscopical examination it was found to be a small round-celled sarcoma. The cord was about the size of the wrist.

On cutting into the substance the first time it resembled the mottled appearance of cheese; in some places it was white, in others mottled and in other places it was dark. The section for microscopical examination was taken from the mottled portion, and revealed the small round cells of sarcoma. The patient experienced no pain at any time. He was very reluctant, when I gave my opinion that it was a malignant tumor, to have it removed and only consented because of the size of the organ. It made its first appearance in May, or at least it was then that he discovered it, and by October had assumed its present size, though it is now considerably shrunk from being in the solution. This I considered quite a rapid growth; it was ovoidal in shape. At first I thought I could discover some fluctuation but the introduction of the needle failed to find anything of a fluid nature. On making an

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incision about the tunica vaginalis a spoonful of fluid escaped, but I presume it could not be considered cystic because such fluid is found in inflammatory conditions of this membrane.

The rectal condition was normal; there was a nodulated condition at the internal ring which plugged up the orifice so that there was considerable of the growth in the abdominal cavity. The prognosis, of course, was very unfavorable and the man will evidently die before long from exhaustion. One week before the operation he became very weak and took to his bed so that when I saw him he could talk little above a whisper.

The speaker, in answer to Dr. Bryson's query as to how much of the cord was excised, said he went as far as the internal abdominal ring and when he had severed and ligated the cord it retracted into the cavity. However, he did not open the abdomen.

DISCUSSION.

DR. J. P. BRYSON said he presumed there was some reason for not going further because the excision of a growth of that extent with involvement of the cord would be of no particular service except to relieve the patient of the presence of the tumor; recurrence would take place and we could expect the patient to succumb in a few months. The absence of pain is rather unusual. Some years ago he had an interesting case under observation: He had operated on the mother of the patient some months before for a malignant growth in the breast, and the young man presented himself three years afterward with an enlarged testicle. Both syphilis and tuberculosis were excluded and there was no doubt of the malignancy of the growth. He removed the growth, going far up, and thought he had removed the entire growth; he also followed down the vas deferens along the bladder; this was found to be healthy. The patient returned and asked for another examination. Quite a large fusiform mass was found on the left side extending well up into the lumbar region. The patient passed into the hands of another physician who made a different diagnosis, and operated. The patient, after suffering great pain, died; it was on account of this pain that he had consulted the speaker.

The specimen seems much shrunken but he thought there was no question about the diagnosis even from the clinical aspects of the case. He said it was well to follow the rule whenever we see a growth as large as the fist to cut it out; we should, in fact, remove even

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simple granulating growths undergoing degeneration and metastases. Very few of these growths are single.

Several years ago he saw a rather interesting case in a physician; he was syphilitic and had an enlarged testicle. The patient said that three years after the initial lesion his testicle swelled considerably but he paid little attention to it. After a time it, as well as the tunica vaginalis, began to shrink, until there remained nothing but a small, fibrous lump. He consulted the speaker and it was not difficult to make a diagnosis of syphilitic testicle with complete atrophy from neglect. The lump had grown to be a large mass when he was last seen and removal was advised. This was done, the dissection being made up the peritoneum for quite a distance toward the kidney. Since then he has remained perfectly well.

DR. R. B. H. GRADWOHL said he saw a case with Dr. Bransford Lewis on which he made a microscopical examination. It was in a boy, aged 18 years, and was found to be a small round-celled sarcoma; the tumor was not large and did not extend up the cord. Dr. Lewis dissected high up and apparently removed the entire growth, but four months later the patient had a recurrence in the stomach.

DR. V. P. BLAIR asked if it was not common for sarcomata in this region to recur by metastases through the lymphatic system. He thought it easy enough to explain a metastasis in the stomach or lungs where the infection is carried through the circulation but he did not know that it was common for it to extend through the lymphatic system.

THE PRESIDENT suggested that probably all had seen cases of sarcoma that were practically painless. He asked if Dr. Bryson considered it to be a rule that pain is present in sarcomatous growths in this region; is this pain due to tension on the tunica? Does the Doctor observe the pain to be exaggerated in recurrence?

DR. BRYSON said as far as the first case mentioned was concerned it would be a question whether it occurred by metastasis through the lymphatics. He believed that sarcoma does occur along the line of the lymphatics and thought the occurrence in this case was through this channel. Of course, metastasis through the blood channels might occur anywhere and so he was astonished to learn, after having seen two cases, that it was not so uncommon in the lungs. Cancerous growths—epithelial—might occur anywhere, but the fact is well under-

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stood that new growths, even cartilaginous, the apparently benign or non-malignant, and neoplasms of all kinds, should be removed, because of the danger of infection through the associated lymphatics, and metastasis will occur even in cartilagenous growth. The fact is, we do not often see any growth, even of this size, to be a simple single growth; the great majority are mixed growths.

In regard to pain in sarcoma, he said that was a question of the parts affected. We are very apt to have pain in all growths and swellings in the lymphatic glands. A growth, however, is not always the kind that destroys the nerves. We are all familiar with growths on the kidney, which are so commonly painless, and also growths on the testicle, especially sarcoma, but a growth upon or an enlargement of the post-peritoneal lymphatics, he thought, were particularly apt to be painful. In the case mentioned above pain was the cause of the patient complaining; the swelling was not at first manifest. The pain was very severe and nocturnal like syphilitic pains.

Meeting of November 21, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

DR. LUDWIG BBEMER demonstrated the formation of

Leucocytosis.

Leucocytosis in appendicitis is a fact. I believe that the unreliable study of leucocytosis which takes place after ingestion, will be abandoned and attention will be called to the character of the leucocytes. We know that a leucocyte and a pus corpuscle are said to be the same thing where blood corpuscles constitute the elements of pus. This is true and is not true in the sense that a pus corpuscle is a changed leucocyte. The pathological change in a leucocyte can be demonstated by proper re-agents and by proper preparation of the specimen. I believe the time will come when it will be demonstrated that certain leucocytes are not leucocytes proper, but pus corpuscles in the blood. I do not say that I am able to demonstrate this, but I know this, that I have seen diseased conditions of the leucocytes in cases of appendicitis, though these cases had, unfortunately, progressed so far that there was a peritonitis and a large pus sac.

He then demonstrated by chart the transition of the blood con-

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stituents into leucocytes and pus cells, and showed a typical leucocyte on the chart and called attention to the central portion from which radiated the various tracks of granulations, in the one pointed out there being four. He then explained how it was possible to demonstrate certain conditions in a case of appendicitis. Whenever we find pus corpuscles—corpuscles that have been changed and passed from the normal state to a diseased condition—taking other symptoms entering into the case, I believe we will be able to diagnose a case of appendicitis. The corpuscles have their typical arrangement altered; we do not find the well-circumscribed arrangement or the truncated appearance but we find bundles. The nuclei have become more or less diffused. This is from a case of appendicitis and you can see how the arrangement of the granulations has been changed; it is not only changed in color but also in arrangement, and whereas the granulations are very fine here, there they are clung together on account of the degenerative process and appear much larger, and on account of their largeness and discoloration I would pronounce this a pus corpuscle. I do not say that in every case we could make a diagnosis, and I must say that I have never yet made a diagnosis, but in two cases I have been able to see the pus corpuscles by means of the proper staining. Whether we will ever be able in every case to diagnose pus and thus settle questions of the greatest importance, of course, I am unable to say.

In cancer we have not been able to discover any decided change as far as the red blood corpuscle is concerned. As a rule, there is a high degree of anemia and the red blood corpuscles present the appearance characteristic of anemia. I do not think there is anything characteristic of cancer in the blood upon which we can base a diagnosis.

DISCUSSION.

DR. DEUTSCH asked if any change would be expected before the patient became septic.

DR. BREMER said not until the pus made its appearance.

DR. DEUTSCH.—So there would be no benefit derived from blood examination in the initial stage.

DR. BREMER.—No, I think not; however, when it is found it is positive evidence that there is suppuration somewhere, and if the physical signs are present I think the diagnosis is clinched.

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DR. HOMAN asked how the presence in the blood of these bodies was accounted for and if there was a re-absorption of the white blood corpuscles.

DR. BREMER pointed out a drawing on the chart which he said was from a case in which there had been an initial chill; but the question was it a chill due to malaria, as the patient had been suffering from malaria—or was it a chill of pyemia? The plasmodium was not present, but changes were found which enabled me to conclude that there was a pus formation somewhere in the body and the clinical signs soon bore out this conclusion.

DR. JACOBSON asked if the streptococci were found.

DR. BREMER.—No, not in the blood.

DR. H. W. SOPER said he had seen a statement that small doses of pilocarpin given to a healthy person would cause an increase of the leucocytes in the blood. About the same time he saw another statement that in pneumonia it was observed that leucocytosis developed in those cases in which recovery occurred. Taking these two statements together he decided that he would try this method in the next case of pneumonia. The opportunity soon came and he administered pilocarpin in small doses, not employing any other remedy; the blood showed a very marked increase of leucocytes and the patient made a good recovery from the pneumonia, but a week or so later developed a very large empyema. Dr. Baumgarten had seen the case in consultation. The question he wanted answered was whether the production of so many leucocytes had anything to do with the formation of the empyema?

DR. BREMER thought Dr. Soper should not reproach himself for having injected the pilocorpin and believed he could absolve himself from being instrumental in causing the empyema. He did not think the pilocarpin had anything to do with the production of the empyema.

State Sanatorium for Consumptives.

The special order of business of this meeting was the consideration of the following resolution offered at the meeting of November 7, 1901.

WHEREAS, The provision by State Government of Sanatoria for the reception and care of tuberculous persons has become an ac-

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knowledged necessity for the better protection of the public against tuberculosis in its various forms; and,

WHEREAS, Several states already possess such sanatoria while Missouri, although the fifth state in the Union in order of population, has taken no step toward providing for the establishment of such an institution, therefore be it

Resolved, that the Society of City Hospital Alumni recognize the urgent necessity for an adequate institution designed for the exclusive care and treatment, both hygienic and medical, of tuberculous persons in the State of Missouri, the said institution to be erected and maintained by the State government.

2. That this Society shall at once, by correspondence and otherwise, seek to enlist the active co-operation of other medical societies and bodies, and of the public press throughout Missouri to the end that a sanatorium, commensurate with the importance of the object sought, be authorized by legislative action, the same to be erected in some suitable location in the mountainous part of the State.

3. That copies of these resolutions be transmitted to all other medical societies in the State, to medical colleges, to the medical press and the local daily press, to the Governor, and members of the General Assembly; and that a persistent agitation of this subject be maintained in order that public opinion may be so influenced as to secure favorable action by the next legislature toward the effectual prevention and control by approved methods of one of the destructive diseases to which mankind is liable.

DISCUSSION.

DR. GEORGE HOMAN said the purpose in bringing this matter before the Society was, if possible, to start a movement in the direction indicated. We have a large tuberculous population, and it seems to be the drift of medical and sanitary opinion that some institutions, hardly a hospital in character, should be provided for tuberculous patients who can not take proper care of themselves, and who are in more or less indigent circumstances. The term sanatorium is used rather than hospital, the prevailing idea being an open air or out-door treatment. This scheme has taken shape in a number of the Eastern states—Massachusetts having established one, also New York, and Pennsylvania is moving in that direction. The United States Government is also carrying out this idea, in having established in New

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Mexico a sanatorium at Ft. Stanton, a former military reservation. At this place all persons in the army, navy and marine hospital services may receive this form of treatment. It is practically open-air treatment in a salubrous climate.

As far as the speaker has been able to gather information, the institutions in New York, Massachusetts, and Pennsylvania have been, or will be situated at a considerable elevation. That in New York, will be in the Adirondacks; the Massachusetts institution will be about a thousand feet above the sea level, the highest point in that State, being about 1,200 feet. The Pennsylvania institution will be in the mountains. He had not been able to obtain the plans of working of the institutions, but he supposed they would be large institutions, built for the use of those persons who are not yet bed-fast, and who can do out-door work. such as the strength of the different patients will permit. All varieties of lighter employment will be followed, such as gardening, farming, dairying, and that sort of work.

He thought this State would be very soon in good position financially to undertake this work, as the outlook is favorable for Missouri to be practically out of debt by the time the next legislature meets, and if this scheme meets with general favor in the medical profession, he believed it could be carried through. It is certainly worthy of discussion as one of the means of combating tuberculosis, as this is a matter that is now uppermost in medical thought as well as in the public mind.

DR. BREMER heartily indorsed all the resolutions. He said that a number of years ago, a Dr. Brehmer, of New York, established the first sanatorium for the exclusive treatment of tuberculous patients. At that time doubt was expressed as to the efficacy of such treatment, but the brilliant results obtained convinced the medical profession and the public that sanatorium treatment was the right treatment for this form of disease. He did not think there was any particular selection of the cases, the advanced cases were admitted with the mild ones and of all the cases received, one-third were completely cured, one-third were improved to such an extent that they could go back to work, and one-third died. That is certainly a very good showing—two-thirds improved and one-third deaths. It shows what can be done by rational treatment. A former assistant of Dr. Brehmer entered the sanatorium 40 years ago as a consumptive. When it became possible

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o make the diagnosis of consumption by demonstration of the tubercle bacillus, his was one of the first cases that showed the bacillus. That man is still living, and afterwards carried out the ideas of his master, and perfected them.

The consumptive must have a proper education along certain lines in order that he may not go home and spread the disease. One of the principal objects of a sanatorium for the care of consumptives is the hygienic education given these persons. In this way the disease, if not prevented, can at least be restricted. There has been a marked decrease in all parts of the civilized world. In Germany and England there has been a remarkable decrease in these cases, due to the education of these patients, the result of their sojourn in sanatoria of this character.

DR. DEUTSCH mentioned an institution, managed by Dr. Bonny, of Denver, who practiced in Denver, and gave special attention to tuberculous cases. This gentleman established a hospital in Denver, and also a sanatorium in the wild regions of Colorado for the care of consumptives, known as the Estes Park region. The speaker knew of one case that had been under the Doctor's care for ten years, and was now, to all intents and purposes, well.

The Denver institution is a beautiful place, and arranged according to the latest scientific methods. The blankets, mattresses, and bed cloths are sterilized in large sterilizers built for that purpose, as soon as the patients leave them. As soon as the weather permits, he takes all the patients to a little town called Lyons, near Denver, and begins from that point to place the patients at various elevations in the mountains, suited to each case. He has camps at different points, each with trained nurses in attendance, and the Doctor goes out twice a week to the different camps. He claims wonderful results. They sleep out doors and don't really know what a closed house is until the winter gets very severe. When the weather becomes too severe, he takes them back to the sanatorium in Denver.

DR. JACOBSON mentioned that Dr. Wm. Porter had charge of a hospital on the bluffs of Carondelet for the treatment of consumptives. The institution would accomodate probably 300 or 400 persons, embracing late methods of treatment. He thought the best place, probably, for such an institution would be in the Ozark mountains.

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DR. L. H. BEHRENS said it was probably in the clinics where we saw that class of cases of consumption which would be most benefitted by a sanatorium, such as suggested by Dr. Homan. In clinical work, which is principally amongst the very poor, he had found many cases of phthisis pulmonalis in its very incipient stages. The patient is given instructions in hygiene, and the benefit of home treatment, but usually the case goes through the various gradations to a fatal termination. The treatment is very unsatisfactory in the city, and if for no other purpose than to get the patients in the open air, a great deal will be accomplished by having them in a sanatorium. Time and time again do we see the benefit derived by sending these people to such places as Arizona, New Mexico, Southern Texas, with an elevation of 3,000 feet and upwards. The very poor must remain in the city, where the treatment is very unsatisfactory. If they could be educated, not only the poor but the better class of patients, in the proper care of themselves and observe the rules laid down as regards promiscuous expectoration, there would be some mitigation of this awful condition.

He hoped the agitation would be continued. If we have no ideal place for the establishment of such an institution, we certainly have many palces that are much better situated for the treatment of this disease than in the city.

DR. H. S. CROSSEN asked if it would be the more advisable to agitate the building of such an institution in this State, or the creating of a fund for sending these patients to some other State, where there were better conditions for their treatment. He recognized that this suggestion was a new departure and thought it would be difficult to accomplish, as the establishment of the hospital in this State would give employment to a large number of persons, and is always a matter of importance.

DR. HOMAN said Arizona, New Mexico, and Texas possess undoubted advantages for this class of cases, and generally the States in the Rockies and along their southern slopes, but he thought the first thing to do, was to make the move in the direction indicated in the resolutions. The next step might be to send patients somewhere else, or there might be branch institutions established. That would be a matter for future consideration. He believed we have in this State sites equal perhaps to those of any of the States that have instituted

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this method of treatment. He did not know the maximum elevation of the Ozarks, but thought it was a thousand feet or more, and the conditions ought to be very favorable, as the mountains are covered with pine, cedar and hardwood. An extreme elevation, of course, is not desired, and the character of the soil, the surroundings, mean temperature, amount of sunshine, rainfall, etc., should be considered.

DR. BREMER said the institution established in the Adirondacks is not at a great elevation. In the City of Berlin excellent results have been obtained by the sanatorium treatment, which is, in a way, a notorious consumptive breeder. By strict attention to hygiene they have excellent results, and in 100 cases there has been but one case developed in a number of years. This would show that the disease is not, as claimed, strictly infectious; that is, one where the germ is carried by means of the clothes or other articles to persons who inhale the pathological germs, and develop the disease.

In regard to the spread of tuberculosis, we are still much in the dark. All experiments made are laboratory experiments, and can not imitate the natural state fairly. It is a remarkable fact that in the big Berlin hospital for all lung cases, inclusive of tuberculosis, there has not been one case contracted by contagion. What we know is that, under proper hygienic treatment, not excluding drugs, but the wise employment of drugs, a great deal is done in restricting the spread of tuberculosis.

Where is the money to come from? The State is nat inclined to further undertakings of this kind. In many of the European countries we see a great deal of charity in this line. It is not only the patient who must be educated, but the rich man should be taught the wisdom of giving liberally to such institutions. The State alone is powerless. He thought the capitalist should be educated to give some of his money to institutions devoted to the cure of diseases, and giving a man a good body. Much of the beneficence of the rich man is ill-placed.

DR. DRECHSLER said that he believed that there were good locations in the Ozarks for such an institution, and that it was not necessary to put up a large building, but a number of buildings on the cottage plan, on a large piece of ground, say one thousand acres or more. These cottages to be built of yellow pine, without paint on the interior, but may be given a coat of whitewash on the exterior.

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Those able to work could be given employment about the place, so as to make the home almost self-sustaining. While he was in Louisiana a number of years ago, in the pine regions of St. Tammany Parish, about 34 miles from the coast, he visited a health resort where he found several consumptives who were improving rapidly; here he found this cottage plan. It seems that the atmosphere among the pines is a good stimulant, and is beneficial in its effect upon the lungs.

DR. BEHRENS said the altitude of the institution in Albany, N.Y., referred to by Dr. Bremer, is 1200 feet. Sunshine is what we have to depend upon in out-door treatment, and exercise. Patients sent South do not receive much medicine but are out of doors most of the time.

The speaker has observed a great deal more than he of the infectiousness of consumption, but he could not but believe it is infectious. He mentioned the case of a family in South St. Louis in which consumption developed. The father and mother gave a good history, the mother being about 52 years of age and the father about 60 years of age, and died recently of valvular heart disease. There was no history of consumption on either side and both were healthy-looking people. Their son was 16 years of age when he was stricken with phthisis; he did not know how he became affected. A brother who slept with him died in about three months of consumption. A sister, who worked in one of the laundries of the city, about 22 years of age, contracted a cold and in three months she developed phthisis and died, and another sister at the end of a year died of the same disease. He believed this was a case of infection being carried from one to the other. The carpet in their one room must have been impregnated with the bacteria as they spat on it constantly.

In the City Hospital several years ago two nurses died within one year of consumption; they were in the consumptive ward and neither gave a history of consumption in their families, so I was informed. The treatment of these cases in the clinic is a failure for the reason that no adequate measures are taken to prevent its spread in the case of the very poor.

DR. BREMER said there is no question that the tubercle bacillus is the cause of consumption, but the point is, and it is of vast importance, that back of the bacillus there must be a condition favorable to the production of the disease Our crowded tenement houses—from two to four persons living in one room—alcoholism and depression, these are

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the things that produce tuberculosis and the bacillus only steps in and finishes the job. In the old country it has been observed that placing a tuberculous and a healthy person together has never resulted in the transmission of the disease from the one to the other, and these men have paid special attention to the matter.

On the other hand, those who have communion with each other do not transmit or become attacked by the disease. It is a disease associated with misery, though this does not prevent rich persons from contracting it, and where the best hygienic conditions prevail we have seen consumption develop. There is a peculiar mental condition manifested in the tuberculous patient; they disregard all rules yet seem unconscious of it; they will spit on the floor and maintain that they have not done so; they will cough in the face of a person and declare they did not. The speaker had seen this in his hospital practice. If tuberculosis were really such an infectious disease everybody would have it. It is well known that the miserable hygienic and social conditions of the people play an important part in the spread of tuberculosis.

He agreed with Dr. Behrens that the surroundings described, especially in tenement houses and alleys where there is a great congregation of people and where no attention is given to cleanliness, infection takes place, but otherwise this infection is of minimum importance. The tubercle bacillus is triturated and floats in the atmosphere and if the disease were really so infectious we would all die, because we all inhale the bacillus every day.

Be the infection, however, ever so great and deadly, the curability of sanatorium treatment is established. The Ozark Mountains are in all respects suitable, there is splendid water and good air and the country is free from malaria. Judging from the remarkable results obtained elsewhere he thought our State as well adapted for the treatment of consumptives by this method as any in the country.

DR. V. P. BLAIR said the great ends attained in sanatoria for consumptives, especially for the poor, would be proper food, segregation and a more hygienic life. He thought the matter of elevation for a sanatorium for consumptives desirable but not absolutely necessary. In Funchal, Madeira, there is a sanatorium for the treatment of consumptives, founded by the late Emperor of Brazil. In this institution are found a great many consumptives from Brazil. It is located not

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over 100 feet above the sea level and the climate is rather damp; the amount of sunshine is not great as the sky is always more or less overcast with clouds, yet the results obtained are very good. The men in charge are scientific people and their methods are entirely modern. In the Canaries the climate closely resembles that of the Arizona plateau. Great numbers of English tubercular patients go to these islands and many live but a few feet above the sea level, though at Teneriffe they can obtain an elevation of 12,000 feet. Englishmen who go to sea for their health generally go to a bad climate, but the great majority do well. On the ships they have good food and when in the tropics they can sleep on deck. There are places in southern England where they have enormous sanatoria for the treatment of consumptives. It is claimed that they can live out of doors and that is about all that can be said of them; it is a damp, miserable climate, yet they have good results in their sanatoria.

He thought the moving of patients from this State to others in order to get the benefit of sanatorium treatment would be very expensive. He had been in Colorado, New Mexico and Arizona for ten months. The air is dry and stimulating in these states and the patients are able to sleep out of doors; it is this out of door life that, he thought, is the greatest benefit to these people. The climate in western Missouri somewhat resembles that of Colorado The air is bracing, the sun is warm and there are a great number of sunny days, so that he though all along the western border of Missouri a somewhat similar effect could be obtained as that in Colorado or the elevations of Arizona.

THE BETHESDA PEDIATRIC SOCIETY.

Meeting of January 31, 1902; Dr. John Zahorsky, President, in the Chair.

DR. PHIL HOFFMAN read a paper (see page 91 this issue) on

True Torticollis.

DISCUSSION.

DR. BLEYER asked if there was much danger of dividing the anterior jugular vein, and if this vessel could be made prominent by pressure. Does this contraction result from irritation of the spinal

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accessory? He believed the muscle was usually atrophic in these cases.

DR. NEWCOMB asked if it is necessary to cut the trapezius in certain cases.

DR. FISCH said the restoration of the function of the muscle can be expected since the muscle is not divided. A division of the sterno-mastoid muscle near its center would result in atrophy and destruction of the contractile power.

The asymmetry of the face may also be explained by congenital lack of development. It is conceivable that the same causes which induce shortening of the sterno-mastoid may produce a lack of growth in the facial muscles.

DR. ZAHORSKY referred to five cases of hematoma of the sterno-mastoid which he had observed in the last five years. In not one case did torticollis follow. He asked if permanent contracture follows the so-called rheumatic myositis.

DR. HOFFMAN believed that the atrophy of the face was almost entirely due to the diminished blood supply, since an improvement follows when the muscle is divided. A sufficient number of divisions of the sterno-mastoid have not been done to observe its effects on its function. The trapezius is not cut. There is little danger of wounding the anterior jugular vein: pressure does not make it visible.

The mistake of operating on spasmodic or false torticollis is often made; some cases of myositis may lead to permanent contraction. The torticollis may be due not so much to congenital shortening as to lack of growth.

It is a mistake to call all forms of wry neck torticollis, the diagnosis should have reference to the lesion and not to the symptom.

Pollen Theory of Hay Fever Untenable.—Matzuschita and Heyman have made an extensive research into the evidence that tends to prove hay fever is due to the irritation of pollen upon the nasal mucous membrane. They inquired into the quantity of pollen in the air during the time when hay fever is prevalent. Only a small number of such particles were found in the air. Patients suffering from hay fever had fewer particles in their nostrils than others. They conclude that the pollen theory is untenable, but were not able to offer any other hypothesis.

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REPORTS ON PROGRESS.

MEDICINE.

In Charge of W. M. Hoge, M.D.

Metabolism in Diabetic Coma.

The acid-intoxication theory of diabetic coma (Editorial *Medical News*, December 7, 1901) to-day finds almost universal acceptance. The high grade of acidity of the urine in diabetes has been recognized for a number of years, but only recently has the relation between acidosis and diabetic coma been fully appreciated. In most instances the immediate pre-coma period is characterized by the presence of large amounts of inorganic acids in the urine, though occasionally this does not occur; but it does occur sufficiently often to be a valuable indication when present.

In healthy individuals the exhibition of 10 to 15 grams of sodium bicarbonate is sufficient to render the urine neutral or alkaline; in diabetes 100 to 200 grams are often required. It is an important point in the treatment of coma to neutralize the acids and favor their excretion by the urine.

A Study of the Initial Symptoms of One Hundred Recent Cases of Small-pox.

Wm. Welch and Jay F. Schamberg (*Philadelphia Med. Journ.*, December 21, 1901) say that after slight malaise or, perhaps, a few days of vague pains, fatigue and loss of appetite, the symptoms of small-pox appeared suddenly and often with considerable violence. The earliest symptom was most frequently a chill, followed by fever, often of 103° or 104°F., rising by the second or third day to 105° or even 107°F. Prostration was marked, often extreme. Irritability of the stomach was frequently extreme. Headache was the most prominent of the early nervous symptoms; it usually followed the chill, but sometimes preceded it. Pain in the back was not as constant as some other symptoms but occurred in more than half of the cases. Vertigo was a common early symptom. Prodomal rashes were observed in

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some cases, but usually they have disappeared before the patient is brought to the hospital; they usually appear upon the second day of the invasive fever and last twenty-four to forty eight hours; the most common type is that resembling measles, but it is irregular in its distribution and is not elevated above the surface; a scarlatiniform eruption is somewhat less frequent. A third form is the purpuric or hemorrhagic, consisting of closely aggregated, pin-point and pin-head sized petechiæ; it has a predilection for the lower portion of the abdomen and inner aspect of the thighs, occasionally appearing in the axillæ and on the lateral surfaces of the chest.

Raynaud's Disease.

Carl Beck (*American Journal of the Medical Sciences*) shows by skiagrams that in this disease changes are not limited to the soft tissues, but that the nutrition of the bone is much more disturbed than is commonly supposed. In his case marked atrophy of some of the phalanges and exostoses were demonstrated.

Rheumatism as Cause and Effect in Inflammation of the Throat.

William Cheatham (*New York Medical Record*, December 14, 1901) says the present state of our knowledge on the relation of tonsillar affections to rheumatism might be summarized as follows:

1. It is undoubed that a certain number of cases of acute rheumatism are preceded by an angina in a proportion of from 30 to 80 per cent.

2. Both rheumatism and angina have many etiological points in common—season of the year, cold, wet, fatigue, depression, vitiated air, etc.

3. The connection of angina and rheumatism, though undoubted in a number of cases, is not clearly established.

4. The tonsil may be the point of entry of the rheumatic virus, although the macroscopic appearance of the throat gives no indication of its being affected.

5. The particular affection of the throat which is associated with rheumatism is not yet established, apparently it is not a peritonsillar abscess,

6. Peritonsillar inflammation does not appear to be arrested by the administration of antirheumatic remedies. Many cases of paren-

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chymatous and lacunar tonsillitis, however, are considerably benefitted. That this proves the rheumatic nature of these affections can not be accepted.

7. Further research is required to differentiate the various form of angina to determine which one is associated with rheumatism and to discover the true nature of rheumatism.

The Vagus and Its Newer Physiology.

Jeliffe (Editorial, *Medical News*, November 9, 1901) calls attention to the importance of the results of the investigations of Professor Pavlov, of St. Petersburg, relating to the function of the vagus.

The vagotomized animals of experimenters previous to Pavlov died of a sort of cachexia within a few weeks after the division of the second vagus, and it was disputed whether death was due to trophic changes in the lungs, and systemic disturbances consequent upon the lowered activity of respiration, or to deglutition pneumonia.

The distinguished Russian physiologist has shown that they really died because of disturbance of their digestive functions.

If they are fed through a gastric fistula, the esophagus being closed to prevent regurgitation of food which might enter the lungs by way of the insensitive larynx, vagotomized animals may be kept alive indefinitely, provided their food is of a bland, unirritating character, and that their stomachs are washed out whenever fermentative processes cause digestive disturbances.

Without these precautions the animals invariably perish from the well-known cachexia.

This cachexia, Professor Pavlov found to be due to a form of digestive autotoxemia, together with inanition, from failure of the food to be properly prepared for assimilation.

In every way the vital functions of the digestive tube were lowered by section of the vagi. Purgatives, for instance, that in normal animals produced only slight effects, in vagotomized animals caused persistent diarrhea that finally led to a fatal termination.

Respiration becomes slower and the internal respiratory processes are interfered with by section of both vagi. Their trophic influence upon the lungs, however, is denied. Animals kept alive for months showed no trophic changes in the lungs. The same observation applies to the heart; this organ suffers only as a result of the digestive disturbance.

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After section of the vagi the internal temperature is subject to variations from slight causes. A little exercise causes a rise of 2.5°F. Exercise for a couple of hours may cause a rise of 4° to 6°F. Variations in the temperature of the surrounding air produce serious changes in that of the animal.

So that, apparently, much of that elusive quality, known as vital resistance, is dependent upon the function of the vagus; and by a consideration of the above facts, we are enabled to form a clear conception of the manner in which mental impressions influence the organic processes of the body.

The Influence of Secondary Infections in Chronic Pulmonary Phthisis.

Alexander G. R. Foulerton, F. R. C. S. (*Philadelphia Medical Journal*, November, 1901). Frequently, in text-books, lectures and special articles, the secondary infections in chronic pulmonary phthisis, if considered at all, are referred to in such a way as to give the student the impression that they are of minor importance.

In this article Foulerton ranks them, and we think correctly, as the principal agents in the destruction of lung tissue, and in the production of the fever, emaciation and cachexia, which characterize this disease.

Uncomplicated chronic pulmonary tuberculosis is rarely diagnosed, for the reason that so long as it is uncomplicated it is usually so localized, and gives rise to so little constitutional disturbance that the patient either does not consult a physician, or if he does, the real nature of the trouble is either not suspected, or can not be confirmed. Occasionally, however, there will be a scanty mucus secreted and thrown of from the affected area, which contains the characteristic bacilli.

That it is by no means of rare occurrence, however, is shown by autopsies.

Of 128 cases dying of malignant disease in the cancer wards of the Middlesex Hospital in eighteen months, lesions were found in the lungs of 34, of which a majority were undoubtedly caused by a tubercular infection from which the patient had recovered. Of these only three had given a history of past illness, referable to the respiratory tract.

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These observations, we may remark, are in accordance with those announced a few years ago by the late Prof. Birch-Hirschfeldt.

The bacteria of secondary infection are numerous and varied, but it is to the pyogenic cocci, and above the rest to streptococcus pyogenes that the greater part of pathological changes and clinical symptoms of the recognized cases of chronic pulmonary phthisis are due.

Ordinarily, these bacteria, which are inhaled with the inspired air, are arrested in the nasal cavity, and if some reach the bronchi they are unable to overcome the resistance of the healthy tissues and their secretions. But when this resistance has been lowered in a certain area by tuberular infection, which has developed an inflammatory focus, and when in addition in the act of coughing large numbers of bacteria are directly inhaled through the open mouth, secondary infection by pyogenic bacteria readily occurs.

Uncomplicated chronic tuberculosis of the lungs does not ordinarily give rise to marked symptoms, either by the local disturbance which it produces, nor by its toxins, nor does it tend to produce a rapid or extensive destruction of tissue. And in probably a majority of cases becomes spontaneously arrested.

It is to the pyogenic bacteria, especially streptococcus pyogenes, that we must attribute the fever, rapid wasting and tissue destruction.

From this point of view, the principal therapeutic indication is to guard the subject of pulmonary tuberculosis from secondary infection, or when this has occurred, to prevent its reinforcement by renewed infection from the outside. For it is established that pathogenic bacteria within the body tend to lose their virulence if renewed infection can be prevented This occurs when the patient, in a suitable climate or sanitarium can breathe germ-free air, and the rapid improvement of patients under such circumstances and their prompt relapse into their previous condition on returning to former surroundings is a matter of common observation.

The author is inclined to hope for favorable results from the use of antistreptococcic serum against the secondary infection, and of tuberculin or some similar product against the tubercular infection, either before secondary infection has occurred or after it has been overcome.

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NEUROLOGY.

In Charge of M. A. BLISS, M.D.

The Division of the Sensory Root of the Trigeminus for the Relief of Tic Douloureux.

W. G. Spiller and O. H. Frazier (*University of Pennsylvania Medical Bulletin*, December, 1901) refer to an article, "The Division of the Sensory Root of the Trigeminus for the Relief of Tic Douloureux; an Experimental, Pathological and Clinical Study, with a Preliminary Report of One Surgically Successful Case." We have only space to cite conclusions. Anyone at all interested would derive pleasure and profit from a perusal of the original article, for it is an ably written report of painstaking experiments, and a very careful operation.

Dr. Spiller concludes, from numerous experiments on the division of the sensory root in dogs, and from a review of the experiments of others, that we are not convinced that regeneration of the sensory root can occur in man. Even if partial regeneration of these roots were possible, it does not follow that pain would return. There might be partial return of sensation without pain.

In view of the great uncertainty of regeneration of the sensory root of the trigeminal nerve, and of the great mortality in removal of the Gasserian ganglion, the division of the sensory root is a justifiable precedure, bu we recognize this operation to be on trial.

Dr. Frazier reviews the anatomy, and the various results selected to avoid hemorrhage. He concludes as follows: As a substitute for all operations which depend for their success upon removal of all or a part of the ganglia, I recommend an operation which depends for its success solely upon division of the sensory root of the ganglion. Granting it will effect a radical and permanent cure, the advantages of this operation are the following:

1. It should be attended with a lower mortality.
2. It obviates a number of difficulties.
3. Its execution is, comparatively speaking, simple.
4. It is practically complete when the posterior aspect of the ganglion and its root have been exposed; that is, it is practically com-

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plete before the difficulties, most varied and troublesome, common to other operations, have even been encountered.

5. The integrity of the cavernous sinus is never in danger.

6. The risk of injuring the sixth nerve is avoided.

Dr. Frazier thinks it possible to preserve the integrity of the motor root. In event of a double operation, this would be of great importance.

Alcohol and Insanity.

Arthur S. Hamilton (*American Medicine*, December 26, 1901) reports out of 826 admissions to the Iowa State Hospital for the Insane, from October 1, 1898 to January 1, 1901, 19.91 per cent of alcoholic insanity among the males, 1.11 per cent among the females. He defines alcohol insanity as characterized by hallucinations, particularly of sight and hearing, with delusions of persecution and often of marital infidelity, especially in chronic cases. There is great irritability, and often a tendency to aggressiveness and violence. Consciousness is not much disturbed. Prognosis is favorable, but relapses usually occur, and after repeated attacks, the patient becomes permanently demented.

The quantity of alcohol necessary to produce the disease varies with the character of the liquor employed, and the stability of the individual. Hamilton quotes, under heredity the case of the notorious Adda Jurke, a drinking woman, born in 1740. Prof. Poloman found out of 709 descendents, 142 professional beggars, 64 lived on charity, 7 had been convicted of murder, 76 of other crimes, and 181 of the women were prostitutes. Alcoholic insanity is much more common between 25 and 40 years of age. The youngest in Hamilton's series was 16 years, the oldest 66 years; 95.87 per cent of the cases were males.

The percentage of unmarried was 54.65 per cent. Occupation and race have a certain effect. The larger number are among those who are poor and have a cheerless environment. And the Germans contribute a larger pro rata than other races. Total abstinence is absolutely essential to successful treatment, and to secure this, seclusion in an institution is imperative. Most cases are discharged too soon, and promptly relapse.

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PEDIATRICS.

In Charge of M. J. LIPPE, M.D.

The Blood in Infancy and Childhood.

Gertrude Underhill Light (*New York Medical Journal*, November 30, 1901) makes a short résumé on the study of the blood in early life. She notes that the blood in an infant tends to resume its embryonal characteristics, that changes out of proportion to the exciting cause are observed in disease, and that lymphocytosis is usual

Splenomegalia has not the significance that it has in later life. At birth the red cells average 5,742,080 to the cubic millimeter, there being an accompanying excess of from 25 to 30 per cent in the hemoglobin, with a corresponding increase in the specific gravity. A physiological leucocytosis averaging 15,000 to the same cubic volume, exists in the new-born. At the age of twelve the blood assumes the adult type.

In pneumonia the significance of leucocytosis follows the adult rule. Tuberculous meningitis, uncomplicated, is not attended by leucocytosis which is of value in diagnosis. In scarlet fever, leucocytosis is the rule; in measles not so, unless severe inflammatory complications occur.

The number of cases of primary anemia (leucemia) become fewer when carefully studied, and the characteristics of the blood in infancy are considered.

Primary Intestinal Tuberculosis in Children.

David Bovaird, Jr. (*New York Medical Journal*, December, 1901) after a careful study of all recent literature on this subject, arrives at the following conclusions:

1. That English reports alone show any considerable number of cases of primary intestinal tuberculosis.

2. That this disease is a very rare affection among children in or about New York, little more than one per cent of the cases having this origin.

3. That the proportion of tuberculosis cases found at autopsy in New York is less than that of European observers.

4. That the evidence connecting tuberculosis among children with the consumption of the milk of tuberculous cows is very scant.

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Three Cases Treated With Antistreptococcus Serum.

Girsdansky (*Pediatrics* September 1, 1901,) reports three cases in which the antistreptococcus serum was used.

The first case was a very severe case of follicular tonsillitis in a girl aged 8 years.

The second was a case or severe scarlet fever, with an abundant exudate in the the throat, in a girl aged 11 years.

The third was scarlet fever in a boy aged 5 years.

The author claims to have received prompt curative action in all these cases.

Special Form of Chronic Infantile Dyspepsia.

In an editorial (*New York Medical Journal*, October 5, 1901,) the gastric syndrome observed in nurslings and described by Weill and Pehn in *Lyon Médicale*, is briefly reviewed. The affection is characterized by vomiting occuring regularly in from fifteen minutes to one-half hour after nursing.

It has been ascertained that digestion is much slower in these cases. There is no hyperchlorhydria.

These symptoms have been explained by gastric retention and closure and spasm of the pylorus. There is no fermentation of the contents.

Hereditary Syphilis.

Jacobi (*Medical Review of Reviews*, October 25, 1901), speaking of the visceral pathology of this disease, mentions the occurrence of nephritis, and urges the more frequent examination of urine of the young, which is very easy; a ball of clean absorbent cotton in front of the vagina, or a rubber bag over the penis, will hold sufficient for examination; and after all, he says, nothing is easier than the introduction of a catheter in girls, and still more so in boys. Convulsions are about as often uremic as they are cerebral, and their etiology should be recognized more frequently than appears to be done. Enlargement of the liver with cicatrical lobulation occurs.

There is splenic enlargment, due to syphilitic endarteritis; the pancreas is sometimes enlarged; the testes may be enlarged, dense and sclerotic, in the new-born interstitial hyperplasia, in older children gummatous degeneration. Rarely there is infiltration and ulceration of the digestive tract; the so-called white pneumonia is common in early

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cases. Gummata of the thyroid occur in retarded hereditary syphyilis; the heart is rarely affected.

Luetic changes in the nervous system of the fetus and newly-born are rare, but quite frequent in infancy and childhood.

Petechial hemorrhages into the skin, mucous membrane, and muscles, due to syphilitic endarterites, occur.

The occurrence of "syphilitis tarda," that is, tertiary symptoms first appearing at the fifth, tenth, twentieth or even thirtieth year of life is difficult to explain; chronic bilateral synovitis is apt to be luetic; gummata of the skin, with ulceration, occur; the nasal mucous membrane may be catarrhal or thickened; crusts form in the nose, making respiration difficult: nodulation, ulceration and ozoena occur; destruction of the septum and bony frame-work of the nose cause it to sink in; similar changes in the palate and pharynx are found. Gummata of the tongue, with ulceration, and glandular enlargement of the cervical, axillary and inguinal lymph nodes are frequent. No diagnosis can be made, if abortion occurs prior to the fifth month. When near the normal end of utero-gestation, there is an epiphyseal osteo chondritis, mainly of the lower extremities, gummatous tumor of the spleen, and adherent peritonitis; when the fetus lives nearly up to the close of gestation, the anatomical proofs of syphilis increase in number. At full term, pemphigus of the palms of the hands and soles of the feet indicate syphilis; in less severe cases, a brown or pale red exanthem on the face, hands, feet and genitals, with coryza, rhagades of anus and lips occur. Condylomata during the second to the fifth year, point to syphilis; small, thin white cicatrices on or about nose, mean heredity. Hutchinson's teeth during second dentition are nearly always met with; the earlier the symptoms, the worse the prognosis.

In the way of prophylaxis, he says, no syphilitic should marry until three years have elapsed since the last sign of syphilis was noted. During pregnancy, when syphilis is known to exist in the man, both parents should be treated, there being no danger to the fetus from the administration of mecury.

Treatment.—A syphilitic infant should be nursed by its mother, but never wet-nursed; treatment should be carried out for two years, with periods of intermission.

Mercury does not affect the mouth and bowels of infants like it does those of adults; calomel, one-eighth of a grain, three times daily

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for many weeks; iron, if the infant is anemic, no reliance is to be placed on mercury given to the mother; mercury with chalk, in doses of one-sixth to one-third of a grain, may be given.

Inunctions of blue ointment are of value, but are apt to do harm, as the skin of the infant is very sensitive. In urgent cases, the hypodermic injection of ten or fifteen drops daily of the following solution is advantageous: Bichlorid, one part; sodium chlorid, two parts; water, 200 to 300 parts. Inject deep into the muscular tissue. Bi chlorid bath, $^1/_{10000}$ in extensive skin lesions, does well; iodides are not needed in the secondary stage; in syphilis tarda, potassium iodid.

In iodism, affecting the mucous membrane, potassic chlorate and atropin; in ill-nutrition, iron and arsenic.

The Value of Throat Cultures in Diphtheria.

M. H. Tussell (*Journal American Medical Association*, November 16, 1901) urges the necessity of making cultures in all cases of throat affections, inasmuch as many cases of membrane in the throat are not due to the Klebs–Loeffler bacillus, and many cases of true diphtheria are without severe symptoms. A diphtheritic membrane may be easily detached and leave no bleeding surface, whilst an exudate due to some other organism may be a true membrane and impossible to detach from the mucous membrane. He claims, and that rightly, that a diagnosis is often made earlier, by making a culture, than by the clinical picture, and its value in early specific treatment and prophylaxis is certainly worth the trouble incurred He recommends the following equipment for making cultures: (1) A good microscope with an oil immersion lens, and the necessary working knowledge; (2) culture tube of blood serum; (3) an oven with a thermostat; (4) stains, cover-slips and slides; (5) ability to recognize diphtheria bacilli, when present. After acquiring the necessary skill, he says, it is as easy to examine a culture as it is to examine a specimen of urine.

Diagnosis of Suppurative Pericarditis in Children.

Batten (*Pediatrics*, November 1, 1901) reports the results of his study in six cases; and although he regrets his inability to point out one sign on which a diagnosis could be made with any assurance, still he calls attention to a number of clinical phenomena that are of value in leading one to suspect this malady. There is a uniformly rapid pulse,

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out of proportion to any distress or discomfort which the child may exhibit, the pulse being 150 or 160, with very little apparent distress; respiration is increased, but in normal ratio to the pulse; these children are pale, have flabby cheeks, flabby muscles, that are wasted. Severe attacks of syncope occur frequently, with marked cyanosis, when pulse is so rapid that it can not be counted. The physical examination is frequently negative on account of pleural adhesions. He says that it is safer to make an incision between two ribs, or even resect a rib, rather than pass an exploring needle toward the heart.

Milk-Sugar in Infant Feeding.

Jacobi (*Archives of Pediatrics*, November, 1901) in an extensive article urges the substitution of cane sugar for milk-sugar, a substitution that he has practiced for almost fifty years, without bad results. He says that milk sugar in woman's and cow's milk are not identical, and that commercial milk-sugar is often impure. He believes that his method of adding to cow's milk mixtures destined for infants and children, not milk-sugar, but cane sugar, in moderate quantities, estimated rather than anxiously weighed, is correct, and justified by modern research.

Infantile Scurvy and Marasmus.

Huber (*Archives of Pediatrics*, November, 1901) reports a remarkable case of this affection in a 13-months' old infant; he describes its appearance as follows: Emaciation extreme, and prostration marked; sunken eyes, retracted abdomen; the partly closed lids, the immobility, the extensive black and blue discoloration of the body, and the marked emaciation in general reminded the observer of the corpse of an infant who had died of marasmus, undergoing the process of decomposition. The realistic impression was increased by the cadaverous odor; temperature, 95.4°F.; pulse, 93, and hardly perceptible; cry, feeble; gums, swollen, spongy, and bleeding readily; cutaneous hemorrhage over the anterior aspect of the chest and abdomen; right knee swollen, the swelling involving the lower third of the femur. By feeding orange juice, whiskies in small quantities, water internally, salt solution per rectum, milk (boiled, as the child refused raw milk), boiled watered egg, scraped beef, marked improvement resulted, the infant gaining five pounds in two weeks, and eventually made a good recovery.

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RHINOLOGY AND LARYNGOLOGY.

In Charge of J. A. J. JAMES, M.D.

The Hemorrhagic Diathesis in Relation to Operation on the Nose and Throat.

Harrison Griffin (*Medical Record*), although making it an invariable practice to ask a set of questions to determine if his patient be a bleeder or not, has never yet found such a one to admit his condition before the operation. He cites four cases, in all of which there was severe post operative hemorrhage. One case followed a partial turbinectomy, done under cocaine and suprarenal extract, the hemorrhage coming on fifteen minutes after the operation. It yielded finally to packing and morphine injections. The hemorrhage recurred violently six days after the operation, when the nose was again packed, morphine administered, and the patient kept in bed for two weeks.

Two of the cases followed tonsillectomies, and a fourth, an operation on the nose. They all recovered.

Dr. Griffin considers that full doses of morphine act better to controlthese cases than any drug in the pharmacopeia. These cases, he adds, show how important it is to quiz one's patients in regard to the hemorrhagic diathesis, and at the same time to go into every detail. If an operation is in question, and the patient thinks such an operation will relieve his suffering, he will deny all knowledge of being a bleeder.

Laryngeal Paralyses, and Their Importance in General Medicine.

Gleitsmann (*New York Medical Journal*), in discussing this subject, calls attention to the paramount importance and interest of these paralyses, in that their early discovery is often the first intimation of grave affections. For example, cases are known in which abductor paralysis antedated all the other usual symptoms of locomotor ataxia, and again, are those cases in which the position of one vocal cord in the median line, in an otherwise apparently healthy person, was the incentive to a careful examination of the entire organism, and an aneurysm was found.

In many cases of unilateral abductor paralysis, there is an entire absence of laryngeal subjective symptoms. Under ordinary circum-

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stances there exists no dyspnea, nor alteration of the voice, as a perfect approximation of the cords takes place during phonation. To the patient himself his serious condition may be unknown, or may cause him no inconvenience.

On the Importance of Preventing Chronic Suppurative Ethmoiditis by Prompt Treatment.

Clarence Rice, of New York City (*Canada Medical Record*), makes the following points :

No nasal disease should be allowed to progress far enough to produce obstruction, deficient drainage, the close contact of turbinals with septum, and the retention of mucopurulent secretions, because in those conditions there exists great danger of extension of disease to the sinuses, and especially to the ethmoid cells.

All surgical work in the nose should be carefully and cleanly performed, so that no resulting infection can produce chronic suppurating ethmoiditis. He favors the persistent use of antiseptic powders for the first forty-eight hours after operation, in preference to the older method of washing the nasal passages, and believes this is a better safeguard against sepsis.

SURGERY.

In Charge of

A. V L. BROKAW, M.D., and E. C. GRIM, M.D.

Genital Tuberculosis with Special Reference to the Seminal Vesicles.

Hugh H. Young (*Anna's of Surgery*, November, 1901) reports two cases operated for tuberculosis of seminal vesicles, gives a complete survey of the literature on genital tuberculosis, and tabulates all operated cases that are recorded.

CASE I —P. S., aged 62 years. Examination showed an extensive tuberculous disease of both the epididymis, vasa deferentia and seminal vesicles. The bladder and prostate seemed free from disease, though the upper part of the prostate was closely adherent to the diseased vesicles. The urinary examination indicated healthy kidneys, and a few râles, heard in upper portion of right lung, were considered insignificant.

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The operation was performed through a T-shaped incision. The transverse incision through the recti muscles was three inches long and one-half inch above the umbilicus, the median incision extended from this point down to the root of the penis, both incisions dividing the fascia posterior to the recti muscles, but not the peritoneum. The further steps in the operation were: Separation of peritoneum from the vertex of the bladder; catheterization of the two ureters; further separation of peritoneum from posterior wall of bladder in median line until vasa deferentia were encountered; isolation of vasa deferentia and seminal vesicles; incision through upper half of prostate (behind the urethra, thus freeing the vesicles, with a portion of the prostate attached); division of the vasa at the external rings and excision of the testicles, and remainder of the vasa deferentia; excision of a small tuberculous ulcer of posterior wall of bladder; complete closure of bladder; suture of divided recti muscles, and almost complete closure of median incision. Gauze drainage was placed into the space around the bladder. The catheter was left in the urethra. The testicles were removed through two inguinal incisions, but in the other case they were removed through an abdominal incision, by elevating the skin from the rectus muscle.

Patient died on eighteenth day after the operation, but there was nothing sufficient to account for his death in the region of the bladder.

CASE II.—J. C., aged 30 years. In this case the testicle, vasa, seminal vesicles, and prostate were involved, and on the left side of the scrotum there was a sinus discharging pus. The operation was much the same as the former, excepting that the separation of the peritoneum was confined to a smaller area, and the testicles were removed through an abdominal incision.

The wound was closed by approximating the divided recti muscles with four mattress silver-wire sutures. The median incision was closed to within two inches of the symphysis. A drain was placed into retro-vesicle space. Patient reacted well from the operation, and after some delay the wounds all healed solidly. Five months after this the patient died of miliary tuberculosis.

The author summarizes the question of primary involvement thus: "As to the exact point of primary localization, it is quite generally held to occur most often in the globus major, less frequently in the globus minor, and never in the testicle, except as a secondary invasion

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from the epididymis and the tunica vaginalis." Castration seems to have a remarkable effect on the progress of the disease in the genital tract. It is well established that tuberculosis of the prostate and vesicles not only does not contraindicate operation, but in the majority of instances will disappear after the operation. This seems to follow the partial operation (epididymectomy) as well as castration.

The author is free to confess that his study of the literature has completely changed his views upon the subject, and does not feel satisfied as to the advisability of attacking tuberculous vesicles.

He sums up the indications for operations as follows :

Epididymectomy with high resection of the vas deferens is the operation of choice. Castration should be confined to cases where the testicle proper is involved, or the scrotal disease is extensive. Double castration should be avoided, if possible, a portion at least of one testicle being left, even with the risk of local recurrence of the disease. Operations upon the seminal vesicles and prostate should only be done after the removal of the testicular foci has failed to arrest the progress of the disease in these organs, and it has spread to the bladder. Serious involvement of distant parts—pulmonary, urinary, osseous, etc.—does not contraindicate operation, especially since the more exact methods of using cocaine has made general anesthesia unnecessary.

Photographic Technique.

Eugene R. Corson, of Savannah, Ga. (*Annals of Surgery*, October, 1901), describes a method of photographic technique, which he uses to secure bone detail in printing from uneven negatives. In his work in the x ray investigation of the osseous structures he suffered from the disappointment, common to all who use the x-ray, of obtaining inferior prints from good negatives. He found that the negative which showed the fine details of the bones, when viewed by transmitted light, printed very unevenly, the denser part of the negative giving poor definition on the print if the exposure is stopped when the thinner part has received the proper exposure, and conversely the thin part of the negative printing too dark when the denser parts are properly brought out by lengthened exposure in printing. This inequality in the negative is primarily due to the unequal action of the rays on the plate, owing to difference in the thickness and density of the parts skiagraphed. In an endeavor to obviate this defect, Dr. Corson tried

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the usual methods of retarding the printing of portions of negatives, but the shaded ground-glass screen, and the employment of the hand as a shade to the thinner parts, while the denser parts of the negative are being properly brought out, were both discarded as being uncertain in result, and irksome in execution. The method finally adopted is one used by professional photographers in portraiture. After the application of a substance, in this case a solution of certain gum resins in ether (Hance's ground-glass substitute), which will adhere to the back of the plate and will carry a pigment, he secures the equalization of his negatives by rubbing burnt umber into this coating, behind the thin parts of the negative. This pigment effectually evens up the printing by shading and thus retarding the printing of the thin parts of the negative. By this method you can constantly test your backing by a print, lighting the shading here and making it denser there, until you secure a print with all the details of the negative preserved. The prints secured are honest, as the process adds nothing that is not on the negative, and wipes out nothing. As examples of prints, Dr. Corson presents a skiagraph of an elbow and an enlargement of the same skiagraph. These negatives were equalized by the method above described, and the fine detail of the highly-exposed parts, the olecranon and shafts of the bones, is retained, and equally good definition is obtained from the denser and less thoroughly exposed condyles. Dr. Corson uses, in making his bone skiagraphs, a 15-inch coil with large condenser capacity, energized by a large storage battery with the Queen independent interrupter. In his communication he accentuates the fact that in skiagraphing bone, where heavy discharges with great penetration are necessary, the powerful coil is essential.

Case of Sarcoma Treated by the Roentgen Rays.

Carl Beck (*New York Medical Journal*, November 16, 1901) reports a case of melano-sarcoma of the internal malleolus, with metastases in the groin. The tumors and involved glands of the groin were extirpated twice, and recurrence followed. The more important growths were removed again, and irradiation of the area with the x-ray was begun. The times of exposure were ten, twenty, thirty, and then forty minutes. In the next six weeks irradiation had been done seven times, and not only had there been no trace of a relapse, but a number of metastic nodules of the calf, especially those near the area of irradi-

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ation had, *mirabile dictu*, disappeared, while others had shrunk. The inguinal tumor, however, became larger, and was operated again.

The author does not indulge in adventurous hopes, but thinks such experiments justifiable in desperate cases. The fact can not be denied that, in great contrast to the former course, no relapse was observed, and what is still more interesting, well developed sarcomatous tissue shrank and cicatrized. This proves the influence of the rays beyond doubt. How far this influence goes, however, *in toto*, is not demonstrated by this observation, and further experience will have to clear it up.

The author states that the operator's hands as well as the other parts of the patient must be protected with tin-foil, as the danger from burns is not small.

Dr. Beck adds the following note, written later;

"In revising this report, three weeks after the demonstration, I would say that the defect at the outer aspect of the malleolus is perfectly cicatrized. After nine weeks no relapse has been observed. The inguinal tumor was removed on the day after the demonstration, as intended, and now the inguinal area is also irradiated. The disease has reached a stage in which final recovery can hardly be expected, and it is to be regretted that the thought Roentgenotherapy did not suggest itself to me at an earlier period. Further reports of the issue of this case will be published."

The New Sydenham Society.—Jonathan Hutchinson, F.R.S, General Secretary of the New Sydenham Society, has requested Messrs. P. Blakiston's Son & Co., of Philadelphia, the American agent of the Society, to announce the publication of "An Atlas of Clinical Medicine, Surgery and Pathology," selected and arranged with the design to afford, in as complete a manner as possible, aids to diagnosis in all departments of practice. It is proposed to complete the work in five years, in fasciculi form, eight to ten plates issued every three months in connection with the regular publications of the Society. The New Sydenham Society was established in 1858, with the object of publishing essays, monographs and translations of works which could not otherwise be issued. The list of publications number upwards of 170 volumes of the greatest scientific value. An effort is now being made to increase the membership in order to extend its work.

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BOOK REVIEWS.

International Clinics. Vol. III. Eleventh Series. Pages, 299. 1901. Philadelphia: B Lippincott & Co.

As of special interest may be mentioned articles on "Phototherapy After Finsen's Method," by Valdemar Bie, M.D; "The Influence of Pregnancy on Co-Existing Diseases," by Amand Routh, M D.; "Gonorrhea and Marriage," by Prof. Louis Jullien; "Clinical Treatment of of Inebriety," by T. D. Crothers, M.D.; "The Localization of Nervous Lesions," by Alfred Wiener, M D.; "The Clinical Laboratory in Private Practice," C. N. B. Camas, M.D.

Libertinism and Marriage. By Louis Jullien (Paris, surgeon of Saint-Lazare Prison; Laureate of the Institute of the Academy of Medicine, and of the Faculty of Medicine of Paris. Translated by R. B. Douglas. Size of page 5½x7½ inches. Pages v–169. Price, extra cloth, $1 net, delivered. Philadelphia: F. A Davis Co., 1914–16 Cherry street.

This book is devoted to a consideration of a subject of great practical interest to the general practitioner. It takes up the various phases of the subject in a logical manner and decides for the physician many questions which, in the absence of literature on the subject, had to be answered according to individual discretion or judgment. There is in this book a curious mingling of subjects In includes the subjects of professional discretion, of the treatment of blenorrhea in the male and in the female, as well as the question of marriage in these cases. It is written from a distinctly French standpoint, and some of the suggestions could not be carried out in this country. It is a small book and can not be considered in any way exhaustive, since the all important subject of syphilis and marriage is not dealt with.

Favorite Prescriptions of Distinguished Practitioner, with Notes on Treatment. Edited by B. W. Palmer, A.M., M.D. Seventh Edition. New York: E. B. Treat & Co., 241–43 West 23d street.

This book is just what the title says, a list of prescriptions found

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by experience to be effective. It is a compilation from the published and unpublished writings and records of a number of eminent men. The arrangement of the book is practical. The prescriptions are classified according to diseases, explanatory notes being added where necessary. Diseases are arranged in groups, making it a ready reference book. This is a useful book especially for the young practitioner.

The Surgical Treatment of Disfigurements and Deformities of the Face. By John B. Roberts, M.D., professor of surgery, Philadelphia Polyclinic, etc.

This little brochure will be read with more than passing interest. It contains much of value to the general surgeon. This field of surgery is a broad one, and we hope the present little volume will be the neucleus of a comprehensive text-book.

Outlines of Physiology. By Edward Groves Jones, lecturer on physical diagnosis in the Atlanta College of Physicians and Surgeons, and professor of physiology in the dental department of the same. With 107 illustrations. 12mo.. 400 pages. Price, $1.50 net. Philadelphia. P. Blakiston's Son & Co., 1012 Walnut street.

The author of this little volume has apportioned the space very admirably to the demands of the divisions of his subject. The language is concise, brief and remarkably simple, and the illustrations are well selected. He omits all theories and all experiments, yet presents the main facts taught in medical colleges. It is a convenient and readable outline of physiology for rapid review work, yet we concur with this statement in the author's preface: "There is no short road to knowledge, and it would be very unfortunate should such a book as this in any way discourage extended research."

Syphilis; Its Diagnosis and Treatment. By William S. Gottheil, M.D., professor of dermatology and syphilology New York School of Clinical Medicine, etc. 1901. Chicago: G. P. Engelhard & Co.

This little volume contains 208 pages, is nicely bound and printed on fine paper. It contains a concise résumé of the latest conclusions regarding the natural history of syphilis and the best methods of combating its manifestations. The disease is evidently microbic, but the specific bacterium is not, as yet, isolated; but the fact is establishe d that the essential virus is contained in the primary and secondary

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lesions, the tertiary lesions do not contain the virus. The description of its clinical characters is excellent, brief and clear. The various methods of treatment are succinctly described. Twenty-eight figures illustrate the text. This will be found a very useful book to the general practitioner.

The Practical Medicine Series of Year-Books. Composing Ten Volumes of the Year's Progress in Medicine and Surgery. Issued monthly, under the general editorial charge of Gustavus P. Head, M.D.. professor of laryngology and rhinology, Chicago Post-Graduate Medical School. Volume I., General Medicine, edited by Frank Billings, M.D., head of medical department, and dean of the faculty of Rush Medical College, Chicago, with the collaboration of S. C. Stanton, M.D. Price of this volume, $1.50; price of the series, $7.50. 1901. Chicago: The Year Book, Publishers, 40 Dearborn street.

This volume is one of a series of ten, issued at monthly intervals, and covering the entire field of medicine and surgery. The utility of the year books are well known. The busy practitioner can not study all the medical journals, and a summary of a year's progress, put in a concise form, is ever welcome. But this series has an advantage over others, in that each subject is presented in neat compact volumes, which can be can be carried in the physician's overcoat pocket, or his surgical or obstetrical case. The practitioner will find it convenient to read while waiting on a tedious case, or riding in the buggy, carriage or street car. Such a series has been needed, and, no doubt, will prove very popular.

In regard to the first volume, it may be stated, that the editor's name is sufficient to guarantee its trustwothiness and practicability. It is a review of the best recent literature, which is at the same time critically analyzed by the editor. Diseases of the respiratory organs, circulatory organs, infectious diseases, and constitutional diseases are considered in this volume in a manner that will give general satisfaction.

Genneral Surgery. Vol. II. Edited by John B. Murphy, M.D., professor of surgery in the Northwestern University Medical School.

This small volume is truly a vademecum, a book well worth reading, as it is replete with the best selections from recent surgical literature. The selections cover commendably a broad field.

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NOTES AND ITEMS.

Fifty Years a Teacher.—Dr. E. H. Gregory, professor of clinical surgery in the Washington University Medical Department, delivered his last lecture Friday, January 17, 1902. It was the fiftieth anniversary of his career as a teacher of medicine. Besides the class, many prominent physicians, who had been Dr. Gregory's pupils, assembled to express their congratulations. He has held the chair of clinical surgical since 1867; before this he taught anatomy. Of all his associate teachers when he began his career not one survives.

The thousands of his pupils and friends in congratulating him will also express the desire that he may long continue to exert that benificent influence in the profession that has so markedly characterized his whole life.

Obituary.—We regret to announce the death, on January 16, 1902, of Dr. J. T. Eskridge, of Denver. He was a voluminous writer and careful investigator. He was one of the associate editors of the COURIER, and we, with the profession in general, will feel his loss very acutely.

Medical Director of the St. Louis World's Fair.—Dr. L. H. Laidley has been appointed Medical Director of the Louisiana Purchase Exposition. Dr. Laidley is one of the best-known physicians in St. Louis, he has been very prominent in medical circles, and his appointment will give general satisfaction.

The Termination —itis.—The *New York Medical Journal* calls attention to a common misconception, that is, the ending —itis meaning inflammation. This error has been repeatedly refuted, but it still crops up. Modern convention has in most instances restricted this suffix to signify inflammation, although there are several exceptions. The origin of this suffix must be traced to the Greek adjective termination—mas., ites; fem., itis. Thus hydrops acites, means bag-like dropsy; nosos pleuritis, means the pleural disease; nosos endocarditis, means the endocardial disease. There is

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no word in Greek that can be transcribed itis, and meaning inflammation.

Tuberculosis in Snakes. — According to the *Yale Medical Journal*, certain medical experts in Chicago have been studying an interesting case of tuberculosis in a snake. For several months a large African boa-constrictor has been very sick, has refused all food, and appeared to be suffering. It was killed with chloroform. At the post-mortem examination, it was discovered that extensive tuberculosis of the lungs, bronchial tubes, and liver was present. On account of the rarity of turberculosis in cold-blooded animals, this case possesses considerable interest.

Bile an Excretion. – Albu, in a recent article, extensively discusses the function of the liver. He finds that the loss of the bile through a fistula does not harm the body. Fat increases the flow of bile, and it, in turn, aids in the absorption of fat. Yet the bile must be considered an excretion, it is a toxic substance that the organism attempts to remove.

Cancer and Salt.—Considerable interest is being taken in the theory advanced by Braithwaite, that the ingestion of salt in excess is the principal factor in the causation of cancer. The other factors are an overnourished condition of the system, an impure condition of the blood, and a local irritation. The excessive consumption of meat, and the impoverishmcnt of the blood, resulting from insufficient oxidation are important factors. The author bases his conclusions particularly on the fact that cancer is rare among the Jews, who consume no bacon and ham.

Camphor Habit.—It is said that the prolonged ingestion of camphor renders the complexion clear and creamy, and, especially in India, many women take in regularly. A "camphor habit" is thus formed, which is very difficult to overcome.

The Fog of our Cities Mostly Smoke.—St. Louis is repeatedly visited, particularly in the spring and autumn, by a very dense fog. It has been pointed out by the local weather forecaster that this fog is mostly smoke. Now, London is beginning to realize that the

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very dense fogs are mostly due to smoke. In the November (16th and 23d) issues of the *Lancet*, the report of the Coal Smoke Abatement Society is given. It has been estimated that 6,000 tons of coal are carried into the air by the chimneys of London. This enormous quantity of coal dust, then a still, moist air, are the factors which cause these famous dense fogs.

The dirt produced by this coal smoke, and the darkness induced by the fog, in addition to an increase in respiratory diseases is responsible for an increase in the death rate.

Yellow Fever in Havana.—The City of Havana, according to a recent bulletin of the War Department, is practically free from yellow fever. This has not occurred for more than a century. The average number of deaths in that city during the month of Novemver has been about 48. This year not a single case has been discovered since September 28th. This freedom is attributed to the recent sanitary measures, working on the theory of Finlay, that the causative germ of yellow fever is transmitted by a a species of the mosquito. No attempt has been made to disinfect houses in order to destroy the poison which may cling to fomites, but all efforts have been directed to the destruction of the mosquitos found in the room with the patient, and protecting the patient from these insects.

Employment of the Danysz Bacillus for the Extermination of Rats.—Abel, experimentally, tried to determine whether cultures of the Danysz bacillus might be used to exterminate rats. In view of the fact that rats are supposed to be the principal foci of infection of the bacillus pestis, measures to exterminate rats in the larger cities possesses a very general interest to students of preventive medicine. As is well known, Danysz isolated his bacillus from field mice, which were affected by a fatal epidemic disease. Abel has obtained irregular results in feeding cultures of this micro-organism to rats. It can, therefore, not be recommended as a reliable method for their destruction.

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ST. LOUIS

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ORIGINAL CONTRIBUTIONS.

Studies About Agglutinins.

BY CARL FISCH, M.D.,

ST. LOUIS, MO.

ABOUT a year ago I had the pleasure of reporting to you the result of some experiments,[1] which, for the first time demonstrated, that the several forms of proteins—I had especial reference to the casein—found in different animals were not identical with each other, but that the homologous proteins, although chemically not distinguishable, could biologically, distinctly be differentiated from each other. As you perhaps remember, I obtained this evidence by immunizing or injecting animals with milk from various sources. Thus I obtained sera that, in a peculiar way, reacted on the milk, by the injection of which they were produced—I mean the precipitation of the casein of this milk by its homologous serum. This reaction was so specific, that the serum of an animal immunized with goat's milk did not affect the casein of woman's milk or of cows' milk, and *vice versa*. My observations have been fully confirmed a little later by Wasserman and Schütze, and *from* them evolved a great number of investigations in the same line, that now enable us, to prove the fact that all chemically homologous proteins of different animals are different from each other. A practical result of these investi-

Read before the Medical Society of City Hospital Alumni, December 19, 1901.

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gations we possess already in an elegant method of determining the presence or absence of human blood in suspected material, a method which, as to exactness and delicacy, leaves all the methods hitherto in use far behind.

What I demonstrated, was the production of a coagulin, a substance that in its qualities could be further characterized by its neutralization by an artificially prepared antienzym. I have since continued my work on some other coagulins, the so-called bacterial agglutinins, an instance of which is known to all of you, from the Widal reaction. The trend of my experiments would, however, escape you, if I would not, before detailing them, give in a few words the relation they have to Ehrlich's side-chain theory. As you know, Ehrlich considers the reaction taking place between toxin and antitoxin as a simple chemical one, a factor that he can well be proud to have established by an enormous amount of work of the most unobjectionable character. You know, furthermore, that the antitoxin to Ehrlich is nothing but certain protoplasmic groups of various cells, which, by combining with the toxin, are eliminated from the household of the cell. Since they are necessary to the integrity of the latter, they are reproduced, and since reproduction always means a hyperproduction, they are reproduced in number too great for the need of the cell. Subsequently, then, they are detached, and now appear as antitoxin in the body fluids. We have long known of substances assimilable to the protoplasm, forming firm compounds with it. But our notion about these substances has been restricted to nutritive substances, while Ehrlich widens it and extends it to all organic substances, having the proper chemic affinity to the above-named protoplasmic groups. The phenomenon of intoxication thus ranges itself among the normal physiologic processes of cell life. Ehrlich calls these protoplasmic groups or side-chains, receptors; in the case where only ferments, cell secretions, or toxins are the combining substances, that means, comparatively simple compounds, nothing else is present, and there this form of receptors is called the one of the first order. Wherever the combination with high-molecular albuminoids or even the dealing with a whole cell is concerned, a more complicated mechanism is necessary. There the fixation of such a giant-molecule is merely the *conditio sine qua non*, and it can be utilized for the

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nutritive functions of the cell only through fragmentation, by means of fermentative processes.

This can be achieved in two ways. It may be that the receptor besides the group, which secures the fixation of the molecule, possesses itself of another active group of enzymotic properties; like, for instance, the tentacles of the sundew, serve at the same time to the catching of insects and to the secretion of ferments for their digestion. Receptors of this kind are those of the second order. But it has been found that the main functions in cell life are performed by a still more complex mechanism, by the receptors of the third order or the amboceptors. In these the receptor is provided with two "catching" groups, in the way of tentacles, of which one attaches itself to and fixes the molecule or cell to be mastered, while the other attracts from the surrounding medium the normally present fermentative substances. It is one of the most gratifying tasks to follow Ehrlich in the positive establishment of these facts, which, to an occasional intruder into this subject, appear more like phantasms. By innumerable painstaking investigations, Ehrlich and his associates, were able to lay clear the course of these processes, and especially the so-called hemolysis (that means the destruction of the red corpuscles of an animal by the serum of another animal) has now been bared of much mystery.

Another very startling fact that was found during these researches, was the great number of different specific receptors that are present in any animal organism, a fact which, with the innumerable variations and combinations that it offers, has shed a great light on many so far unexplained phenomena in regard to immunity. The term specificity must not be widened, but rather narrowed; there is not one specific receptor corresponding to each substance, with which the cell protoplasm may happen to come in contact, but the latter may fit with greater or less ease into different receptors, or, as it is expressed, its chemical affinity for various receptors may be of different degree. It is one of Ehrlich's most ingenious feats to have positively established this fact for a number of hemolytic substances. He lays a great stress on this point, although it extends the realms of investigation almost to nebulous distances.

So far, only for receptors of the third order, this fact has been clearly proved, or more strictly, for hemolysins. It

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would be of the utmost interest, to attempt to do so for other forms of receptors, perhaps of the second order, that means for protoplasmic groups, which, in addition to the catching mechanism, if we may call it so, are provided themselves with an active fermentative constituent.

The Widal reaction, which, to the majority is only known as a diagnostic aid, offers such a chance. In a great number of immunizing processes, with varying material, one of the results is that the immune serum, when brought together with the immunizing substance, produces precipitation (like in the before mentioned test for blood), or, if these substances are cells, that it causes the cells to agglutinate. The most different theories have been advanced to explain this curious phenomenon; none is satisfactory, and the best we can say is, that we have to deal in it with a physical process. I shall explain that later.

To the great degree, in which practically the Widal reaction is used, it is due that we have become acquainted with certain discrepancies in its results, which mainly has had the effect to evoke discussions about the practical value of the reaction. You know, that in some typical cases of typhoid fever the reaction will totally fail, that in others of intense severity it will be weak, as it is called, and that very light cases sometimes give a very strong reaction. Although a great number of explanations could rationally be advanced for these occurrences, none would be conclusive, since it could not be proved by direct experiment. This is different in animal experimentation, where, with the factors in the case known or determinable, the results ought to be constant. However, this is not the case. It has often been observed, that the serum of animals immunized with typhoid cultures behaved very differently sometimes to cultures of the typhoid bacillus from different sources. As the potency of the immune serum for the agglutinative properties is measured by the dilution, in which it will clump together the bacilli of a standard suspension, it was found, that while an immune serum always aggutinated the bacilli, by which it was produced in the same dilution, its agglutinative power was higher or lower for other cultures. How can that be explained, if we assume that a typhoid bacillus is always one and the same thing? Durham,[1] in his remarkable treatise on agglutinating sera, encountered especially these differences; and he, in a

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hypothetic way, assumed that the partial and mutual reactions were due to the fact that the agglutinin was not a single substance, but composed of a number of constituents, of which each one must fit into the corresponding bacillus, to bring about the complete reaction. He found that agglutination by typhoid sera occurred even with bacteria of other species, only in a much less active and pronounced way, than with the homologous bacilli, and *vice versa*.

In the beginning of this year my attention was especially called to this phenomenon by the serum of a rabbit that I had highly immunized by means of a typhoid culture for years kept and transplanted in my laboratory. I do not remember its source. This serum agglutinated the bacilli at a dilution of 1 to 5,000. When tried on a bacillus isolated from the spleen of a typhoid fever patient, the reaction was only obtained at a dilution of 1 to 500, while serum of another rabbit immunized with this latter bacillus agglutinated it at 1 to 2,000 and the former bacillus at about the same dilution. To learn more of this perplexing experience, I started on a series of experiments, of which in the following I can give only a résumé, since the details would be trying to your patience.

I experimented with four different cultures of typhoid bacilli (one, the old culture, and three (2, 3 and 4) isolated from different typhoid fever cases, coming to autopsy at the City Hospital); to these were added a culture (5) of a bacillus, that I shall call, for the want of a better name, coli commune, and which was obtained from a case of cystitis. In order to make the results more easily appreciated and understood, I must say some words about the methods used in them. The immunization of the animals was obtained by intraperitoneal injections of emulsions of agar cultures twenty-four hours old, grown at 37°C., given at intervals of about a week. These emulsions were increased in density, first by the number of loopfuls (always the same loop was used), suspended in a certain amount of salt solution, afterwards by quarter, half, whole, etc., cultures. Before injection the emulsions were heated to 60°C., for three-quarters of an hour. All of the rabbits were treated this way; a goat received the injections subcutaneously. After a certain period some blood was drawn from an auricular vein and tested, and if found agglutinating to a sufficient degree, the animal bled to death. The serum was preserved under toluol, in tightly stoppered

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bottles. Its potency keeps this way unaltered almost indefinitely (at least for six months).

For the testing of agglutinating power, only twenty-four hours' agar cultures were used. One loopful of the growth was taken and suspended in 2 cc. of physiologic salt solution, the diluted serum added, and the contents filled up to 5 cc., with salt solution. The test tubes were kept in an incubator at 37°C. for two hours and the result noted. The reaction was considered complete, when, after this time, the fluid in the tube appeared clear. In doubtful cases centrifugation ensued and to the decanted fluid some fresh emulsion was again added. Since the term, complete reaction in these tests is much more arbitrary, than, for instance, in experiments with blood corpuscles, every experimenter must form his standard, or accept exactly the one of another author. I found that my method was satisfactory, and yielded good results.

The results of the direct experiments are contained in the appended table, the number given to the different sera corresponds to the number of the culture, with which the rabbits were immunized; an additional letter *a* and *b* indicating that two rabbits were injected. The goat was immunized with the culture 1.

	T1.	T2.	T3.	T4.	C5.
Ser. Goat.....	1 : 10000	1 : 2500	1 : 5000	1 : 5000	1 : 100
Ser. 1.....	1 : 5000	1 : 500	1 : 3000	1 : 2500	1 : 100
Ser. 2*a*.....	1 : 2000	1 : 2000	1 : 500	1 : 500	0
Ser. 2*b*.....	1 : 4000	1 : 7000	1 : 1000	1 : 1250	0
Ser. 3.....	1 : 5000	1 : 5000	1 : 7500	1 : 7000	1 : 500
Ser. 4.....	1 : 5000	1 : 2500	1 : 7000	1 : 7000	1 : 750
Ser. Col. 5.....	0	0	500	500	1 : 4500

A closer study of this table shows certain regularities, in spite of the seemingly lawless appearance of the figures. The first impression gathered from it is the great difference of activity of the sera towards various races of bacilli. On the other side, while certainly typhoid bacilli 1 and 2 represent widely distant types of these bacilli, the bacilli 3 and 4 are very much alike, as is also expressed in the behavior of their sera. Still, here, too, a great difference is noticed in comparing the activity of their sera towards T1 and T2. Since all the observations were made under absolutely the same conditions, and since the differences are so marked, an error is excluded.

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The question now arises, how, on the basis of the side-chain theory, all of these facts can be accounted for? The agglutination is due to the combined action of a specific portion of bacillary protoplasm, and of another substance furnished by the immunization of the animal. We must agree that the receptors of the serum attach themselves to the protoplasmic portions of the bacillus, to which they have a specific affinity. Now, it would be highly illogic to assume that each bacillus had only one of these particular groups, just as little as each ganglion cell, must be supposed to be fatally intoxicated by the combination of one antitoxin group with one toxin molecule or micella. We know rather that every animal cell is the bearer of a great number of such receptors, which are either all alike or differ in their stereochemic constitution more or less, and, therefore, in their chemical affinity for the substances, with which they come in contact. For certain bactericidal substances this has been directly demonstrated by Neisser and Wechsberg, and in this lies the reason, why bactericidal sera in certain doses rather kill the infected animal than protect it. It is only a logic consequence that we assume that the specific groups of a bacillus or another cell are not all of them identical, and that the immune bodies produced by them during immunization are not all of them of the same kind. As well as the hemolytic substances can be proved to be different in character in one and the same animal, we have a right to apply the same reasoning to the agglutinins. If this is the case, if we can prove that one and the same typhoid bacillus produces in an animal not one agglutinin, but different varieties of it, varieties that in their affinity for bacillary protoplasm vary, and that, therefore, agglutinate one race of bacilli better than another, we have only to look for the method to show it. This method is given by what Ehrlich calls the "partial absorption experiments." I have applied them to the agglutinins, and have come to the following results, which are the résumé of a great number of single experiments.

As appears from what has been said about the action of the receptors of all orders, they are, during the process of neutralizing the corresponding groups, used up and made inert. If we add blood-corpuscles to hemolytic serum as long as they are dissolved, we come to a point where hemolytic action of this serum can not be demonstrated any more. The same

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obtains for the agglutinins. An agglutinating serum, to which bacteria have been added to saturation, that means, to the limit of its agglutinating power, becomes inert. By rapid centrifuging, it is easy to separate the serum from the bacilli and to obtain a clear fluid, to which now a fresh bacillary suspension can be mixed without the slightest trace of clumping appearing. In this way I tested my sera. A common centrifuge, which gives 3 to 4000 revolutions, and into which small test tubes are fitted, does good service. It is not absolutely necessary to get rid of all of the bacilli in such a suspension, as microscopic examination is always used for control.

The exact agglutinating power, according to my method, being known, it was only necessary to add a slight surplus of bacteria to the serum. The quantity of fluid was always as much as possible kept near 5 cc.

With serum No. 1 of the goat, and the same serum No. 1 of a rabbit, the result always was that after separation with Typh. No. 1, none of the other bacilli were agglutinated, when added to the clean centrifugate. The same was true for serum 2 and *2a*. Serum 3 and 4, when treated in the same way with Bac. 1, behaved differently; here T2 was not agglutinated, but a distinct reaction appeared when the centrifugate was mixed with emulsions of T3 and T4. On the other hand, when serum 3 or 4 were exhausted by their homologous bacilli, there was no agglutinin left for T1 or T2. And again, Serum 1 could not be deprived of all of its agglutinin by clumping in it T3 or T4; on addition of T1 to the centrifugated mixture, distinct and typical agglutination occurred. As to the race of coli used, in no case could any agglutination be observed, after the sera had been deagglutinized by their homologous bacilli.

Other experiments were made to exhaust the agglutinin supply of a serum by a heterologous bacillus; so, for instance, was added to Serum *2a* the typhoid bacillus No. 3, until no more clumping would occur; after centrifugalizing to different portions of the fluid T1 and T2 were given, and a copious clustering occurred. Several more experiments gave similar results, which, it would tire you, to describe more in detail. This observation is of especial importance, since it shows we really have to deal here with distinctly different substances.

It is proved by what has been said, that the agglutinins

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of immune sera act differently on different races of the same bacillus. It is proved that immunization with one bacillus produces receptors of various kinds, some very similar to each other in their chemical affinity, others widely different, and, therefore, unable to act on other races of the same species of bacterium. We are justified to say that the multiplicity of receptors obtains, too, for the agglutinins. I can not here enter into the theoretic possibilities that this fact opens up.

So far we have only dealt with the morphologic phenomenon of agglutination, as the expression of a process that takes place when an immune serum acts on the bacterium, by which this serum was produced. But this does not explain the process of agglutination, the observation that the bacteria under these circumstances are forced to clump together in larger and smaller masses, without being impaired in their vitality. For we see that if we leave a clump of these bacteria alone, they begin to multiply and to produce new generations, as long as the nutritive material supplied lasts. I do not mention the impairment of mobility, because we see typical clumping reactions just as well in immotile cells and immotile bacteria. That all of the explanations offered do not satisfy the observed facts, I have already mentioned. Certainly it is not mere combination of the agglutinin of serum with the susceptible substance of the bacterium, which causes agglutination. If we subject the serum as well as the suspension of typhoid bacilli to dialyzation, until the water flowing from the dialyzator shows no trace of chlorine, the mixture of these two fluids does not bring about the clumping reaction. If the slightest amount of sodium chloride is added, the reaction sets in immediately. That here the salt has nothing to do with the binding of the agglutinin to the bacterial substance, can easily be shown. Let us centrifugate the mixture before the addition of salt, pour off the clear fluid and suspend the precipitate of bacteria in distilled water, eventually centrifugate again and suspend again, to wash away the last trace of the adhering primary fluid. Now we add to the clear centrifugate a culture of bacteria suspended in salt solution, no agglutination will occur. We add to the suspended bacteria on the other side a little salt, and instantaneously the clumping will begin.

We see thus that binding of agglutinin to the bacteria does not cause directly agglutination, but that the interference

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of other chemical substances is necessary for the latter. I will say, in addition, that the dialyzation does not lessen in any way the vitality of the bacteria, as they appear just as active and motile in such a suspension as in physiologic solution. Dialyzation can be most conveniently obtained in small collodion sacs, made over the end of a test tube.

Some other substance causes the same process that makes the bacteria cluster together. Joos[3] and Friedberger[4] have published beautiful experiments on this phenomenon and found that not sodium chloride need to be this substance. Other salts, and even some colloid substances, like glucose asparagin, act in the same way, and some of them more energetically than Na Cl.

I have repeated these experiments and modified them in various ways; in all points I could confirm the results of those authors. The salt concentration to which the mixture of dialyzed serum and bacillary suspension has to be brought, is very low. A sodium chloride addition to make the whole contain about 0.0467 g. mol p. liter, that means 2.7 per m., will cause agglutination immediately. In this respect I differ especially from Friedberger, who maintains that even lower percentages produce the phenomena. With increasing height of the percentage of salt no differences are observed. In 30 per cent up to saturated solutions no agglutination occurs, as I found. For other salts the figures are a little different, but show the same range. It has been asserted by Joos that the action of the salts is chemic, that a combination between it and the agglutinins takes place. The evidence that he brings to strengthen this supposition, is, however, not conclusive, and can be omitted here. It is much more likely that the salt acts merely by the setting in force of physical phenomena, like we observe them in coagulation processes. And here I can not refrain from directing your attention to the recent work, that, especially by Posternak,[5] has been done on the physical properties of the micellæ of proteids.

While so far our knowledge of the properties of proteids and particularly their classification has been based on chemical reactions, to which coagulation and precipitation also were added, it can be shown that many of these chemical characteristics have nothing to do with chemical energy, but are merely the expression of the play of physical forces acting on these substances. We owe it to the advances of physical

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chemistry that many mysterious corners of organic chemistry begin to be elucidated. Forgetting the colloid nature of proteids and not knowing very much about colloid substances, we classified the proteids merely as chemical bodies and referred all of their so-called chemical characteristics to their molecular structure. Thus, it came about that mere changes of their physical properties were attributed to chemical difference and that on mere physical phenomena the farthest-reaching speculations about the molecular texture were built. What we know about albumins, globulins, nucleo albumins, etc., is merely physical, and nevertheless we utilize this knowledge chemically.

The solution of a colloid body is not impermeable to certain membranes, because the molecules of the dissolved substance are too large to pass the pores of this membrane, but because the molecules of these colloids behave differently to the dissociating action of the solvent. We know too much about crystals in inorganic chemistry to assume that in the solid substance the molecules are, as it were, isolated; we know, that here too, they appear in the form of distinctly grouped and arranged complexes, but for which the dissociating power of water is so great that in it they separate into the single molecules. Colloids are merely substances for which this power is not so disintegrating, colloids differ only in this from other substances that the water or another solvent does not dissociate their micellar grouping to the degree to which the simple chemical compounds are disintegrated. Colloids remain in solution as long as the equilibrium between the size and elasticity of their micellæ and the degree of dissociating power is maintained. As the elasticity of the micellæ may be considered constant, it is mainly their size, which can be influenced by various moments, for instance, the temperature. We are, however, more interested here in the change of forces in the dissolving fluid.

If we take a proteid soluble in a certain fluid and thus disintegrate it to a certain size of its micellæ, we can by introducing certain factors into this fluid act on the size of these micellæ. Posternak has made a great series of fascinating attempts in this line; to sketch them appropriately would go much too far for our purposes, but one point I have to mention with a few words, because it touches, as you will see, the subject under discussion.

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If we dissolve in, let us say, a slightly alkaline or acid water some proteid, we can by gradually adding small amounts of sodium chloride, finally produce a complete precipitation of the proteid. What occurs by the dissolving of the salt? You know that we not simply obtain a solution of Na Cl molecules in water, but that a certain proportion of these molecules is dissociated into the two ions Na and Cl. This proportion increases and decreases with the greater or lower molecular concentration of the fluid, so that we well can imagine a solution in which not a single molecule of Na Cl exists as such, but where all of the molecules are disintegrated into the electropositive cation Na and the electronegative anion Cl. It was found by the author mentioned that under similar conditions the precipitation began always at a certain and constant concentration, that means at a time when the relation of the number of free ions to the nondissociated molecules reached a certain proportion. This varied when different salts were used, but was always constant, and the variations are fully accounted for by the difference of the mobility, electric conductibility, etc., of the different ions, a point which I can only mention.

We must conclude from these experiments that there is a battle going on between the ions and the intact molecules for the possession of the proteid micellæ, for which the latter have a specific adhesive, but not chemical affinity. The former have a tendency to decrease the size of the micellæ, while the latter increase it to the point of insolubility or precipitation.

I am sorry that what I say here must appear more or less phantastic, but it would take many hours to prove that the picture I used is really merely a humanized paraphrase of the processes going on in such a solution. The reason why I had to enter into the subject altogether, was that from it could be derived a rational explanation of the phenomenon of bacterial and cellular agglutination. I made especial experiments to find out how much salt could be added without producing in a mixture of dialyzed serum and dialyzed suspension of bacilli the actual agglutination. I found that for Na Cl the lowest limit was a solution of 2.73 per m. (0.0467 g. mol p. liter), in which the coefficient of dissociation is equal to 2.

Solutions more diluted than that leave these mixtures intact and the single bacilli as isolated and motile as they were before. In other words, here also everything points to the fact

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that as the number of intact salt molecules increases, the coagulable substance formed by the union of the agglutinins and the susceptible protoplasm of the bacillus is precipitated; and, perhaps, Kraus is right when he brings it into analogy with the precipitates produced in a filtrated culture by immune serum.

If we return to our starting point, when we said that the agglutinins were receptors of the second order and contained besides the one haptophorous or catching group, a group which directly was able to act on the prey, a fermentative group, we may state the process thus: After the attachment of the agglutinin receptor to the protoplasm of the bacillus the fermentative group of the former begins to exert its action on this protoplasm. The resulting substance is soluble in the fluids of the protoplasm, but coagulates as soon as the bacillus is, by osmosis, invaded with a solution exceeding a certain molecular concentration. The fact that the bacilli are not destroyed, but continue to live in spite of the agglutination, may be due to the presence of the susceptible substance only in the external layer of the bacillary protoplasmic body, which at the same time would account for the sticking together of bacilli coming into contact with one another.

LITERATURE.

[1]Studies about Lactoserum, St. Louis COURIER, February, 1901.
[2]Durham, Jour. Exp. Med., Vol. V.
[3]Zeitschr. f. Hygiene u. Inf. Krankh., Vol. 36 (Joos).
[4]Centralbl. f. Bacteriol., Vol. 30, No. 8.
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New Cures for Consumption.—It is reported from Crakow that an engineer has discovered a gas which is inimical to the tubercle bacilli.

In London, in a consumption hospital, Tesla's high frequency currents and the intravenous injection of a bacillicide is being used with encouraging results. Dr. Bokenham, a London surgeon, has obtained striking results. While the patient is in a recumbent position a current at a pressure of 80,000 volts is applied to the chest for a few minutes by means of a brush held a few inches from the skin.

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SYMPOSIUM ON SYHPILIS.

Read before the Alumni Society of the Medical Department Washington University, January 16, 1902.

Syphilis and Marriage.

By W. A. HARDAWAY, M.D.,

PROFESSOR OF DERMATOLOGY AND SYPHILOGRAPHY, WASHINGTON UNIVERSITY.

ST. LOUIS, MO.

THE whole train of evil consequences, both present and remote, that may attend upon syphilis in the married state has long been recognized, and the subject has been discussed from many standpoints. The question is a very vital one in its social and medical aspects, and probably every physician has had to face it at some time in his professional life.

A person the subject of syphilis wishes to marry, and he desires very naturally to ascertain from his medical adviser if such a step is prudent—if having the disease, or perhaps, we may say, having had the disease—he may hope to escape infecting his partner or procreating syphilitic offspring.

If the physician had settled in his own mind the propriety, under certain circumstances, of such a step, he would next concern himself as to what conditions his patient ought to fulfill medically in order to marry with safety; and finally, he would endeavor to discover if there were any reasons why his patient should defer matrimony or absolutely surrender the intention.

To answer these various questions properly, requires a cool judgment, a deep sense of moral responsibility, and a considerable knowledge of syphilis itself.

I think I may say at once that most syphilographers are agreed in the belief that, under certain fairly defined conditions, the marriage of the syphilitic may be tolerated, or even commended.

With your permission, I shall quote briefly the opinions of two of the most eminent syphilographers now living.

According to Alfred Fournier, if the patient satisfies fully

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all of the following conditions, he would regard him as eligible to the position of husband and father:

1. Absence of existing specific disorder.
2. Advanced age of the disorder.
3. A certain period of absolute immunity, consecutive to the last specific manifestations.
4. Non-threatening character of the disease.
5. Sufficient specific treatment.

The time at my disposal will not permit of an analysis of these various essential conditions of Fournier, but I shall give a few of his conclusions. For example, as regards the age of the disease, he emphatically declares that no syphilitic should be allowed to *think* of marriage until a minimum period of three or four years had passed, devoted to a careful and assiduous treatment. Even after that lapse of time, and providing always that the treatment has been active and methodical, marriage is only *tolerated*, because, other things being equal, Fournier thinks he has no absolute right to interfere; nevertheless, he would feel much safer if six, eight or ten years had gone by.

Notwithstanding all of these restrictions and safeguards, Prof. Fournier, in his brilliant work on this subject, saying that the conditions being complied with, syphilis is only a temporary bar to marriage, concludes that our verdict will always be formed to a certain extent upon a simple calculation of probabilities.

Mr. Jonathan Hutchinson is infinitely more radical. After forcibly commenting upon the exaggerated fears of the public and the profession in regard to this matter, he writes that "supposing a period of two years has been passed since the primary disease in the man, the amount of risk which is taken is probably infinitesmally small. That there is some risk, no one acquainted with the facts, would be prepared to deny. Shall we, on account of that little danger, lengthen the period to three, four or five years? I believe that, to do so, would be to act unwisely. If a similar degree of scrupulosity were to be observed in reference to the risk of transmitting tuberculosis, scofula or the neurotic diathesis, or that of arthritis, or cancer, we should have but few marriages." Mr. Hutchinson goes so far as to say it is possible, in many instances, that a period of *six months* is quite adequate to free a man from the risk of begetting a syphilitic child, but he concludes that

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the rule of forbidding marriage for two full years from the date of the primary sore is a safe one, although, under exceptional circumstances, these limits may be curtailed or extended.

It is unquestionably a fact that syphilis runs its course in many persons in from a year and a half to three years, and then ceases entirely. We also know, on the other hand, that a certain number of cases are malignant from the start, and that in still others, after a variable period of quiescence, either mild or formidable tertiary symptoms may appear. We are also aware that many syphilitics marry, never infect their wives and beget healthy children.

I also believe that in a certain proportion of cases, after a couple of years, or even a less time, the disease ceases to be propagable; but I deny most emphatically that it is a rule, without numerous exceptions, and that any course of action based on Mr. Hutchinson's teachings, is a grave error.

Some syphilitics should never marry at all; namely, those prone to repeated relapses, especially in the shape of mucus patches, those presenting symptoms of malignant syphilis, those in whom the disease has attacked some important organ, and the prohibition is absolute for persons who may have suffered from any of the accidents of nervous syphilis (Fournier). In making up the pathological balance sheet, I should also add to the list those persons having the history of nervous affections in their families.

In endeavoring to form an opinion on this subject, most physicians, and especially syphilographers, go no further than this aspect of the case: Is my patient sufficiently well to marry? Has he met with enough thoroughness the various and difficult probationary conditions that fit him for marriage? These questions being answered satisfactorily, the professional adviser dismisses the matter from further consideration. Unfortunately, there is another side, and a very dark one, that we must bear in mind. A case that has progressed most satisfactorily may, years afterwards, develop the gravest tertiary lesions, that may permanently cripple, or even cause death to the father and husband. Then there is no question of infection for the wife or children, but it too often means total ruin to the family. How often these catastrophies occur, you must ask the ophthalmologist and neurologist. Is, then, a physician justified in affirming unreservedly, as is often done,

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that marriage may be undertaken by the syphilitic with absolute safety?

It may be answered that we all take risks every day of our lives; that when a man buys a ticket for the train, he knows that there is a reasonable chance of his being disabled or killed before his journey's end. Granted; but at every ticket office there is a notice calling attention to accident insurance, thus acknowledging the danger, and the partial remedy. So that I contend that the physician must inform his even apparently well patient of the necessity of his insuring against an evil day if he intends assuming the grave responsibility of the married life.

My own rule of conduct has been to refuse professional consent to the marriage of a syphilitic for four full years from the date of infection, this period being occupied with assiduous specific and hygienic treatment; and further, that there should have been at least two years of complete immunity from specific manifestations. These conditions having been complied with, is the medical man in a position to give absolute and exact guarantees to the patient? I think not.

In spite of all the favorable cases and favorable conditions, the physician can assume no responsibility at all; he may, and should, present fairly a complete survey of the subject in all its bearings, but, having done this, the syphilitic himself must take the risks, near or remote, that belong to his disease.

The Neurological Aspect of Syhpilis.

BY M. W. HOGE, M.D.,

ST. LOUIS, MO.

AS it is not possible, in the limited time at our disposal, to consider even in a cursory manner all subjects of interest and importance in connection with syphilis of nervous system, only certain features of a general character will receive attention.

In what way does syphilis affect the nervous system?

1. By its toxins.

This is the explanation, in part at least, of the functional neuroses, chorea, hysteria, neurasthenia, which have been ob-

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served in the early stages of syphilis, and considered to result from it.

Also of the psychoses, mania, melancholia, etc., for which, though rarely syphilis may be assigned as a cause. But in such cases we must consider that the patient was strongly predisposed, and the syphilis acted, not specifically as such, but merely as any other infectious disease might.

Probably the headaches of early syphilis may sometimes be due to the toxins though here we can not positively exclude organic changes. A few cases of multiple neuritis of specific origin have been reported, and if accepted as authentic, must be considered as due to the toxins, just as in the case of neuritis following other infections.

Haenel (*Archiv f. Psychiat. u. Nervenkrank.*, Bd. 33, s. 431) claims to have observed degeneration, both of the central and peripheral axones, in syphilis, without any specific changes in the connective tissues or blood vessels. This observation is of importance if it can be confirmed, especially in relation to tabes and paresis, since such degeneration must be due to the direct action of the toxins in the nervous elements.

The influence of the toxins, however, is of minor importance (if we except tabes and paresis), as compared with those organic changes which seem to be directly due to the specific virus, and which consist in an inflammation with exudation and cellular proliferation, of the meninges and interstitial connective tissues, and of the walls of the blood vessels and lymph spaces; producing neoplasms (gummata) and a gelatinous exudate, which give rise to pressure symptoms; to narrowing of the lumen of the blood vessels, to occlusion and thrombosis, and occasionally to the formation of aneurism.

These lesions in the nervous system are of especial importance, because even if they yielded to treatment as promptly here as elsewhere (which does not seem to be the case), yet their presence, even for a short time, may produce destruction of nerve tissue proper, which can not be repaired.

So that, practically, damage to the nervous tissue occurs not through the action of the specific virus on it, but indirectly through its action on its membranes, connective tissue and vascular system. Probably the most frequent and destructive lesion is an arteritis, impairing or entirely cutting off the nutrition of a larger or smaller area of the brain or cord.

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At what period of the disease does the nervous system become involved?

Sometimes very early; as early as the first or second months, according to some reports. According to Fournier (*L'Indepandanee Medicale*, October 9, 1901), most frequently from the first to the third year in the cerebral form, during the first year in the spinal.

The opinion formerly current that nervous syphilis is essentially a late menifestation, can not be maintained in face of the results of recent investigations.

What special symptomatic features distinguish syphilis from other lesions of the nervous system?

Probably most characteristic is their multiplicity and irregular distribution, *e.g.*, paralysis of one cranial nerve on one side, and of some other on the opposite side; a hemiplegia of one side, and a third nerve palsy of the other; a hemiplegia, which is later followed by a hemiplegia of the opposite side; the simultaneous occurrence of cerebral and spinal symptoms.

2. They especially (though not exclusively) involve the motor areas.

3. Their manifestations are frequently characterized by exacerbations and remissions, without reference to treatment. Thus, a hemiplegia comes on rather gradually, does not become quite complete, improves more rapidly than does the non-specific form, and perhaps entirely disappears, then recurs, and goes through the same process, perhaps finally becoming permanent.

Of the special lesions of nervous syphilis, among the most frequent are the cranial nerve palsies, most often of the third, then of the fourth, sixth, and seventh in the order named, rarely the other motor nerves.

Relatively frequent is an optic atrophy, of which a concentric, irregular narrowing of the visual field is said to be characteristic. The trifacial, auditory and olfactory nerves are occasionally involved.

These nerve lesions are usually due to the same cause, to compression of the nerve trunks by a meningeal exudate. The inflammatory process, however, frequently penetrating the nerve trunks and extending along their sheaths. Sometimes they are due to the encroachment of gumma.

Of the symptoms due to involvement of the brain, most

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are caused by an inflammation, accompanied by cellular proliferation in the walls of the blood vessels and lymph spaces, which obstructs both the arterial supply and the return current. The transitory cerebral palsies are explained on the theory that this obstruction is at times sufficient to suspend function, but not entirely cut off nutrition; so that when the inflammatory product is absorbed, as frequently occurs, function is resumed. The basal meningeal exudate may also readily obstruct the circulation through the large vessels at the base of the brain.

Gummata naturally may, and do cause, focal symptoms, but cerebral syphilis is not by any means synonymous with gumma; meningitis and circulatory changes act a larger part. The most common mental state in cerebral syphilis is one of hebetude and indifference, merging into confusion, stupor and coma, with the progressive advance of the disease. Not rarely, however, replaced by excitement or delirium, with hallucinations and delusions, so that the functional psychoses may be simulated.

A facies, not infrequent in cerebral syphilis, is, I think, characteristic. The countenance expresses hebetude. The lines of normal expression are partly obliterated. The angles of the mouth are depressed, the eyebrows elevated, and the forehead transversely wrinkled.

The headache of cerebral syphilis is a well-known symptom. It is usually severe, continues, and characterized by periodical exacerbations, usually nocturnal.

Fournier describes as characteristic a special type of hemiplegia, which develops in the following manner: After a headache of several days' duration, the patient notices a feeling of heaviness in one arm, which increases to paralysis. Then the leg becomes involved in the same manner; finally, the face. This paralysis follows headache; comes on gradually, without loss of consciousness, is progressive, extensive, incomplete (the patient retaining the same motion in the fingers and leg), and does not involve sensation.

However, hemiplegia, resembling that due to thrombosis or embolism from other causes, does occur in cerebral syphilis. Here the age of the patient is of assistance in making the diagnosis. The hemiplegia due to syphilis usually occurs at an earlier age than that due to non-specific causes.

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Epilepsy of specific origin, usually begins at a later date than other forms.

Pathologically, affections of the spinal cord are similar to those of the brain. There are the same vascular changes; a meningitis with exudation, which encroaches on the nerve roots and on the cord itself, producing a neuritis similar to the cranial forms, and symptoms due to involvement of one or more of the tracts of the cord.

Spinal syphilis is commonly an early phenomenon, occurring most often in the first year, according to Fournier. It is apt to be refractory to treatment, is not infrequently fatal, and a large proportion of those patients who recover, retain some disability.

Of special lesions may be mentioned transverse myelitis, involvement of a lateral half of the cord, giving rise to a Brown-Sequard paralysis, involvement of the lateral tracts, producing a spastic paraplegia, the so-called Erb type, and involvement of a considerable area of posterior nerve roots, or the posterior columns,giving rise to a condition closely resembling tabes. Spinal syphilis is apt to have cerebral symptoms associated with it, which is an aid to diagnosis.

All these processes are apt to exhibit a peculiar characteristic of syphilis previously mentioned; the tendency to remissions and exacerbations. The inflammatory product causing the symptoms is unstable, of feeble vitality, and readily breaks down and undergoes absorption, when a remission occurs. Then the inflammatory process again becomes active, proliferation and exudation occur, and an exacerbation of symptoms is observed.

A prominent feature in the treatment of nervous syphilis is, that as the tissues threatened are important, easily damaged and not susceptible of restoration if destroyed, prompt results are desirable. So that the treatment must be pushed more energetically than might be thought necessary, if the manifestations were elsewhere located. The mixed treatment is advisable, whenever the nervous system is markedly implicated, mercury being given for its supposed specific antiluetic effect. Iodid, preferably of soda, to promote absorption of new formation. When the involvement occurs early in the history of the syphilis, mercury should be pushed to the limit of tolerance until amelioration occurs, when it may be continued in smaller doses.

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Inunction, or the bichlorid, internally, are the preferable methods of administration. The hypodermic method is to be recommended only when, for some reason, the others are impracticable.

Iodid should be given vigorously, even if the manifestations occur in an early stage of the syphilis. They are due to new formation, which should be broken down and absorbed, and it is for this purpose that that the iodides are considered to be especially efficacious.

Some authorities assert that, after the disease is under control, it is better to give mercury and the iodides alternately; that there is a better response than if either or both are given continuously.

Several courses of treatment yearly, of four to six weeks' duration, should be given as long as four or five years after infection, and it is a good plan to give one or two such courses yearly during the remainder of life.

Early Diagnostic Signs and Symptoms in Hereditary Syphilis in Infants.

BY W. L. JOHNSON, M.D.,

ST. LOUIS, MO.

THE diagnosis of hereditary syphilis is not always easy, and yet its recognition is imperative for the sake of the child's life. Especial difficulties are met in foundling asylums, where, owing to lack of individual care and lack of breast milk, the little sufferers are so prone to malnutrition and marasmus, with their skin lesions and general condition suggesting the possibility of syphilis—here a stomatitis, there an erythematous buttocks, occasionally pustular infections, and frequently *rachitis*. Nor is that all; we frequently have absolutely no knowledge of their ancestry.

Of the cases of macerated fœti or those infants born prematurely only to die in a few hours little need be said, the history, appearances, and especially the postmortem reveal the disease.

The cases we ordinarily come in contact with are those who show evidence of the disease from the first week to the third month, usually about the third or fourth week.

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The most severe type manifests itself early and frequently in the shape of bullæ—the so-called syphilitic pemphigus—usually seen upon the palms of the hands and soles of the feet. These bullæ are usually large, frequently oval, and often coalesce. They contain serum, sometimes blood, and are sometimes tinged yellow from pus. At times, by coalescing, they have as large a diameter as two inches.

Dr. Hardaway, in his text-book, considers the *erythematous syphilide* as the commonest early eruption, and describes this rash as appearing upon the belly and lower part of the chest, and spreading from there to other portions of the body. The lesions, about the size of a finger nail, of ovalish contour and bright red in beginning (effaced by pressure), later, assume a dusky red, and then a copper hue. The maculæ often coalesce to form extensive, non-elevated patches. This roseola frequently resembles measles. The macule may become a papule by infiltration or only the center be occupied by a papule. The skin, too, assumes frequently a yellowish cast.

The *papular* syphilide may come, however, initially and alone, but, I think, is usually in company with one or all of the other lesions, especially the erythematous type.

Through exudation the papule often is transposed into a vesicle. The papule is usually flat, dusky, and frequently scales. The acuminate form has been described, but is not frequent.

The pustular syphilide is usually seen in severe cases, and in conjunction with other syphilides. The pustules have dusky bases, and are seen most frequently on the face, buttox and thighs. The ulceration is deeper, and the crusts darker than in impetigo contagiosa.

The mucous menbranes give two very early and valuable signs and symptoms. First, mucous patches are to be seen upon the lips and anywhere in the buccal cavity, also on the tonsils, pillars or pharynx. Fissures are of great diagnostic value, and occur at the junction of the mucus and cutaneous surfaces, between the fingers and about the nails—the last two are almost positive signs of syphilis.

Second, snuffles is very helpful. The catarrh is severe and persistent, the discharge muco-serous, sometimes blood stained. Crusts form and cause obstruction, so that there is practically no patency of the nostrils, and the child can not

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nurse. Associated with this there is a pharyngitis and laryngitis, so that we have another classical symptom, the *hoarse cry*. Extension of the inflammation through the Eustachian tube sometimes gives rise to an otitis and otorrhea.

Occasionally we have *hemorrhages* from the lesions of the mucous membranes, but often without any visible lesions; hemorrhages occur also from or in the skin.

The *nails* should always be examined most carefully, as their repeated exfoliation or suppuration from the matrix (onychia) is very suggestive of syphilis. Other peculiarities are furrowed, high-arched, claw-shaped nails; in fact, a narrow, claw-shaped nail is a very important sign.

Then we have the *syphilitic dactylitis*, which is thought to be the result of an osteitis about the epiphysis. This is noted about the second month, and is sometimes so slight as to pass unobserved.

Acute epiphysitis gives rise to pseudo-paralysis, which, Jacobi says, is due to the disruption of the epiphysis and diaphysis, and the loss of function should no more be called paralysis than loss of function from fracture, sprain, scurvy, etc.

Osteo-chondritis is almost always an accompaniment. From rickets it is differentiated by the larger zone, dentated and hard character, and extension in both directions, lack of vascularization and swelling; but, instead, sclerotic hardness. In rickets there are both vascularization and swelling (Jacobi). When the swelling becomes recognizable, it is conical and sensitive.

The *liver* is *always enlarged* and also the spleen, and frequently they may be judged so during life by careful palpation.

Cranio-tabes was found in 47 out of 100 cases, known to be syphilitic. The area is usually small (one-half inch in diameter). and is found on the occiput. *Keratitis* is found early, but usually not before the second year. *Jaundice* is sometimes seen, but, taken alone, is not of great value. Idiocy and hydrocephalus are frequently of syphilitic origin.

Not one of the symptoms or signs is pathognomonic, but having several, we have strong evidence, and to this we may add the therapeutic test. Justus' test, so far as I know, has never been tried in infants.

Persistent snuffles, with hoarse cry, dusky erythema or

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scaly eruption, with sores at the angles of the mouth, followed by wasting, especially in a breast-fed infant, is a picture making a diagnosis of syphilis justifiable.

A Gunshot Wound of the Abdomen Inflicting Nineteen Perforation of the Intestines and Four Lacerations of the Mesentery, With Recovery.

BY ROBERT F. AMYX, M.D.,

ST. LOUIS, MO.

THE patient was received at the St. Louis City Hospital at 7:10 p.m., December 11, 1900. John Walker, colored, aged 21 years; nativity, Mississippi; occupation, laborer; social condition, single. Present condition: The patient received a gunshot wound of the abdomen about one hour before coming to the hospital. Examination revealed a wound of the right iliac region just above McBurney's point. The patient was immediately prepared for operation, the usual antiseptic and aseptic precautions being observed. After thoroughly washing and antisepticizing our hands—this procedure requiring about twenty-five minutes, the patient was placed on the operating table and anesthetized, chloroform being used. At 8:15 p.m., an incision five inches in length was made at McBurney's point. On attempting to palpate the intestines, after entering the peritoneal cavity, I was surprised to find the intestines walled off by firm adhesions; the latter were between the omentum, ascending colon and cecum. The adhesions were torn and an entrance made in order to reach the small intestines. It was then found that the omentum was attached to the entire right side of the peritoneal cavity, dividing this cavity into two closed spaces, the one above containing no intestines, while the under one contained the small intestines and the sigmoid flexure.

The small intestines were delivered through the rent in the adhesions and examined. The perforations found were as follows: Two just above the cecum in the ascending colon,

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Read before the Medical Society of City Hospital Alumni, November 7, 1901.

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one about three inches from the cecum in the ileum, two in the ileum about three feet from the cecum, twelve were in the lower portion of the jejunum, these were distributed very closely within eleven inches of the intestines, the latter were very badly contused and lacerated; finally, two more perforations were found in the sigmoid flexure. The two perforations just above the cecum and in the ascending colon were separated by a mere band of intestinal tissue; this was cut away and the edges of the wound enlarged so that all of the contused and lacerated tissue was removed, and when the perforations were closed normal tissue was approximated instead of devitilized contused tissue as would have been the case if the edges of the perforations had not been cut away.

The Czerny-Lembert suture was used in closing the perforations; seven separate perforations were closed in this manner, while that portion of the jejunum which contained the twelve perforations was resected, and an anastomosis of the intestine was made with Murphy's button. In addition to the perforations in the intestines there were four rents in the mesentery; two of the rents were in that portion of the mesentery immediately below the gut in which the twelve perforations were situated. These were removed when making the resection of the gut; the other two rents were sutured, as the blood supply to the gut beyond these points was not disturbed.

The procedure which caused the greatest difficulty was in suturing the perforations in the sigmoid flexure; the adhesions were so firm at this point that it was very difficult to deliver the gut through the opening in the right iliac region.

The abdominal wound was enlarged downward until a better field for work was secured. The perforation in the anterior wall of the gut was comparatively small, while that in the posterior wall was about one and a half inches long, the bullet having passed through obliquely.

After inspecting the entire length of the gut for further wounds and satisfying ourselves that there were no more, the peritoneal cavity was flushed out with normal saline solution; twelve gauze drains were inserted in the various recesses of the peritoneal cayity, viz., above the omentum, below the omentum, above and below the mesentery, into the pelvis and up toward the liver so that drainage was established above and below the liver.

This procedure has been practiced at the City Hospital

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for the past two years with gratifying results in gunshot wounds of the abdomen. After placing the drains the abdominal wound was sutured and reduced to a small size so that the drain could not be forced out by the straining efforts of the patient. An abdominal pack of bichloride of mercury was applied and the patient placed in bed; the head of the bed being elevated about fifteen inches so as to facilitate drainage in the direction of the abdominal wound and toward the pelvis. The time occupied in performing the operation was three hours. The patient stood the long, tedious operation very well. The pulse was 120, respiration 36, temperature 100°F. The course and after treatment were as follows:

December 12.—Slight tympanites present, no distinct signs of peritonitis. One-tenth grain doses of calomel were given every hour until one grain had been taken; this produced one small action from the bowels. The patient vomited on several occasions. Three drops of carbolic acid were given twice during the day; the vomiting disturbed the patient considerably, and I decided to give him a seidlitz powder, this was alowed to effervesce so that most of the carbon dioxid was discharged before giving it to the patient, with this three drops of carbolic acid were given; there was cessation of the vomiting after this.

The patient's condition remained unchanged up to December 17th, when there was a decided change for the better. During this period six to eight drops of carbolic acid with a seidlitz powder were given daily; there was a free movement of the bowels daily, and the patient did not complain of any discomfort. The tympanites which existed immediately after the operation had subsided.

His condition continued to improve. On the tenth day after the operation Murphy's button was passed; for several days previous to this date the patient had complained of pain in the left gluteal region; examination revealed a tumefaction with fluctuation at this point; the parts were antisepticized, cocainized, and an incision was made, about half a pint of pus escaped. On inserting my finger into the pus cavity I felt the bullet imbedded in the tissues; it was extracted and found to be of 44 caliber. After this the temperature, which had been increasing, began to decline. On the third day after the pus and bullet were removed his temperature was 100°F. His condition continued to improve steadily, and he was discharged

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from the hospital March 4th, having completely recovered.

During the first fifteen days the patient was nourished by liquid diet only, no solid food of any kind was given until his temperature began to decline; a semifluid diet was then substituted, such as custard, icecream, whey and peptonized milks, so that the approach to the solid diet was gradual.

I wish to call attention to the manner in which the drains were removed. Instead of removing the entire drain at one time, only a portion was removed each time, so that drainage could continue along each tract made by the individual drain, until the tract closed behind the drainage material; this procedure was carried out with each drain.

Some criticism may be made of the site selected for the abdominal incision. The reason the incision was made at McBurney's point was that it was at a point where the bullet when passing through the peritoneal cavity, would most likely injure the cecum or the ascending colon. When this incision was made it was decided that a median one would also be made if the conditions present should justify such a procedure; this was unnecessary, as it so happened that all of the injured viscera could be examined through the primary incision. The points I wish to emphasize are as follows:

1. The edge of each perforation was cut away in order to get into normal tissue, *i. e.*, tissue which was not contused; so that when the edges of the wound were brought together, repairing process would be more rapid and certain than it would have been if the contused edges of each perforation had been turned in. There can be no doubt that contused tissue around perforations made by bullets often break down; this process going to and often beyond the sutures. This condition has been demonstrated in post-mortems. From this observation I believe all perforations produced by a bullet should have their contused edges cut away before closing them.

2. Whenever we are dealing with gunshot wounds of the abdomen with perforation of the intestines by a bullet, drainage should be instituted. It is impossible to estimate how much infectious substance is carried into the peritoneal cavity by the bullet from outside of the cavity. When the bullet passes through the intestine it carries with it the contents of the organ. Besides this, the contents of the intestine will also pass through the perforations into the peritoneal cavity, so that there is a certainty of a wide-spread infection; one that is not

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removed by the flushing of the peritoneal cavity, in a degree, thorough enough to satisfy one that the peritoneum can take care of itself afterwards.

3. The infectious substance is not the only factor to deal with. The manipulation of the abdominal viscera always produces a slight degree of contusion so that the momentary lowering of the vitality of the peritoneum in the presence of infectious media, in many instances, terminates in a peritonitis of a varying degree.

4. The drains should not be disturbed before the fifth or sixth day, and then only a small portion should be withdrawn at a time. This manner of withdrawing the drains allows a better drainage than by an immediate removal of the entire length of the drain.

5. The diet in the above case was a liquid one up to the fifteenth day; after this period a gradual increase to a solid one, covering a period of one week.

6. The number of perforations made by the bullet was remarkable. The number of perforations in the gut which was removed, *i. e.*, twelve in eleven inches of intestines.

I have with me the resected portion of the intestine which can be inspected. I am unable to present the patient as he was convicted of manslaughter after recovering and is now serving a two years' sentence in the penitentiary. At some future time I may have the opportunity of presenting him to you.

Laryngeal Crisis in Locomotor Ataxia: Report of a Case.

BY CHARLES J. ORR, M.D.,

ST. LOUIS, MO.

THIS particular symptom of tabes dorsalis occurs in but a small per cent of the cases observed and reported. Coming, as it does early in the disease, before the general group of symptoms appear, it is quite often misleading, causing error in diagnosis, failure in treatment, and humiliation to the attending physician.

Read before the Medical Society of City Hospital Alumni, December 5, 1901.

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Frequently laryngeal crisis is accompanied by paralysis, though not always, as the case reported hereafter will show. The common laryngeal crisis resembles an attack of whooping-cough; the sensation of tickling or choking usually precedes the attack, yet the spasm may develop very suddenly; then we have the very severe attacks, in which there is suffocation, loss of consciousness, or even an alarming convulsion. The patient will struggle laboriously to breathe and give long, noisy respirations, and as this becomes more difficult his face gets first pale then cyanosed and, finally, an epileptic paroxysm may ensue. Usually the process does not go to the extreme; after a few seconds or minutes at most, the contraction of the glottis relaxes and the patient quickly recovers. Death, however, may occur in one of these attacks.

The different forms of laryngeal crises may occur in the same patient; he may suffer for a long time with the lighter attacks and become a victim of the severe ones; they may vary greatly in the frequency of their occurrence, sometimes coming so often as to almost preclude the patient's sleeping, and, again, not a single attack for days; sometimes the slightest cause may bring on a violent attack; frequently no cause for the particular spasm can be detected.

If there is no laryngeal paralysis present the local examination may reveal nothing abnormal or only a hyperemic mucous membrane which is very sensitive. The paralysis (usually the abductors) frequently is revealed at the first examination and if not present may be expected later; if unilateral it may cause little or no trouble. It is more often bilateral and this causes difficulty in breathing, which becomes very noticeable if the patient makes any extra physical effort, such as walking rapidly, climbing stairs, etc. The voice remains clear but tires quickly. When the paralysis is present the attacks seem to be more severe in character. Rarely we find a condition of anesthesia in the larynx instead of hyperesthesia, which is the more common one. The paralyses when found are usually persistent and rarely show much improvement.

I am sorry I am unable to present the patient for your personal inspection for I feel sure he is a victim of that relentless disease—locomotor ataxia, though the presence of three cardinal symptoms, as yet, can not be demonstrated. I wish to confirm the statement which is not made by all authors on

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this subject, that this laryngeal crisis, when present, is an early symptom of locomotor ataxia. I have heard, or read somewhere, the opinion that laryngeal crises occur only in individuals whose nerve resistance is weak, in my limited observation I have found this true.

CASE.—Mr. J. J., American, white, aged 28 years, height 5 feet 7 3-4 inches, weight 125 pounds; married; nervous temperament. Father and three sisters living and in good health, all similar in height and comparative weight; mother died at the age of about 35 years of accident. The patient had the usual diseases of childhood, and though always rather slender in figure usually enjoyed excellent health. Six years ago he contracted syphilis and was treated rather constantly for about two years in the usual way, and thought he was cured. About three years ago he had seemingly a severe attack of la grippe, from which he recovered promptly in two weeks, except severe pains in the back lumbar region; these persisted for about three months; he especially suffered after sitting and when attempting to rise, or after lying in bed all night and trying to get up and dress. These finally disappeared and for months he was quite well. He was married about this time, two and a half years ago. Has one child one year old; both wife and baby are in perfect health.

In July, 1900 (17 months ago), while riding in an open summer car he was taken suddenly with a violent cough and choking spell, it lasted only a few moments but alarmed him greatly, his impression was that a gnat or something of that kind had suddenly been sucked into the larynx. In a few days afterwards another attack occurred while he was eating, and at this time the cause was thought to be a bread-crumb. About this time he consulted me; I examined his nose, throat and larynx and observed several abnormalities but nothing to which I could assign the true cause of laryngeal spasm. I discovered the larynx very sensitive to any application, and frequently followed by a spasm. During the next three or four months I saw him occasionally and learned that these attacks continued to occur with varying frequency. I prescribed proto iodid and gave various local applications, but with little or no benefit.

In March, 1901, he was attacked again with what seemed to be an acute muscular rheumatism, having some fever rang-

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ing from 100° to 102°F., intense pain over the entire body but especially in the back and thighs. Examination at this time revealed marked anesthesia of the skin over the lower limbs, especially over the legs; sharp pins could be thrust through the deep layers with no unpleasant feeling to the patient.

Sensation was seemingly normal over the plantar surface. The pupils reacted promptly to light. There was very slight unsteadyness on standing erect with eyes closed. Patellar reflex was, perhaps, slightly diminished. No ataxia was observed.

Dr. Fry saw the patient several different times and a provisional diagnosis of locomotor ataxia was made. After about one month's illness he recovered entirely from the acute symptoms. He has been more or less under my observation and treatment ever since. The laryngeal crises continue, not so frequent, however, and not so severe. During the past six months he has been free of all muscular pains, has gained five pounds in weight, looks and feels well, excepting the occasional laryngeal spasms, which are to him always alarming.

Present Condition.—Marked anesthesia of the skin and deeper tissues over the legs and the same condition, only not so marked, over the thighs; acute sensation over arms and body; knee-jerks less responsive; temperature sense acute, especially for cold; some anesthesia, at times, of the bladder, as evidenced by tardy flow and straining necessitated to void it; no uretheral obstruction; retains his urine longer but empties the bladder perfectly. No double vision; no ataxia, except slight inability to stand on one foot and put the other heel to the knee; can easily walk a line and is conscious of no misstep or unusual sensation in walking in the dark or when barefooted. The patient is very much inclined to constipation, and has observed no loss of sexual powers.

Senile Gangrene of the Right Foot.

BY LOUIS J. OATMAN, M.D.,

ST. LOUIS, MO.

PATIENT, Mr. William S., 80 years of age, native of France, farmer, married. Family history good. Previous history—claims never to have been sick in his

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life as far as he knows. His present trouble began in August, 1900. While loading a wagon a box fell, striking his great toe, the surface was abraded about the size of the toe-nail and just below the nail; this remained in about the same condition, refusing to heal for a month, then he noticed the toe turning blue and also that he was loosing the sense of feeling in it. This condition gradually extended to the first metatarsal joint, when a physician was called to see him. He diagnosed gangrene and advised amputation, which he performed. Up to the time of operation there had been no suppuration and no moisture. Immediately following amputation (which was done at the first metatarsal joint) the whole foot began to swell and a slow inflammation set in. At this time I was called to see the case and found moist gangrene, foot swollen, metatarsal bones protruding, and suppuration with marked odor. Temperature 100°F., pulse 95. The patient was in bed, weak and complaining of constant pain. Physical examination showed general arterio-sclerosis and chronic bronchitis. A bichloride poultice was applied and the case was treated in an antiseptic manner; several abscesses formed and were opened. In four months from the time I first saw the case the line of demarcation began to form at the ankle-joint. The patient's temperature had never been above 100°F., pulse 95 to 100. He sat up most of the time and complained very little of pain.

As soon as the line of demarcation was well defined, I advised amputation; he consented, and after the usual preparations he was given chloroform and the leg amputated at the middle third; the tissues looked fairly well, the vessels very hard and brittle. The wound was closed and a moist carbolic dressing applied. The patient stood the anesthetic very well, suffering very little afterwards. The wound healed by first intention and the patient sat up in one week.

This has been six months ago, and the patient made an uninterrupted recovery. He now walks on an artificial foot.

A New Germ of Pertussis.—Jochman and Krause recently made a careful study of the sputum in cases of whooping cough, and report the finding of a very small bacillus, which very much resembles the bacillus of influenza, and which they regard as the true pathogenic micro organism of pertussis.

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LEADING ARTICLES.

GLYCERINATED VACCINE OR DRY LYMPH.

Shall the glycerinated or dry lymph be used? That is the live question at present. The controversy seems to become only more irreconcilable with age. In studying the various reports found in recent literature, one is struck with the discrepancies between the conclusions of different men, who are equally careful observers. What is the matter? One author states that he obtains more successful inoculations with one virus, while another asserts that the dry lymph takes most frequently. The one reports severe inflammatory reactions, ulceration, and septic infection from the glycerinated virus, while another is enthusiastic concerning its harmlessness. This discussion has been extended over several years, and the end is not in sight. In two recent articles (*Charlotte Medical Journal*, January, 1902, and *American Medicine*, February 1, 1902) Runyon severely denounces the glycerinated virus, claiming that severe ulcerations and inflammatory reactions are liable to follow its use. He claims that it is a dangerous virus, and one that is calculated to bring discredit on the practice of vaccination.

The purpose of glycerinizing vaccine lymph is to destroy the pathogenic micro-organisms which are invariably associated with the process of vaccinia in the heifer. According to the clinical observations of Runyon, Guest, and others this method does not destroy them, but, moreover, favors the multiplication of an unknown pathogenic bacterium, which induces the severe symptom. This is not proved. It will take further observation to substantiate this hypothesis.

When such a vaccine is properly prepared, the lymph is collected from the pearly white vesicles on the fifth or sixth day, it is thoroughly mixed with a certain definite amount of glycerin and water, and then stored in a refrigerator from thirty to sixty days. During this time most of the pathogenic bacteria are starved. At any rate, inoculation experiments on animals show that whereas in the begin-

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ning the lymph contained pathogenic germs, after this length of time none are demonstrable. Again, plate cultures of dried lymph show about ten to one hundred times more colonies of bacteria than the glycerinated virus.

In the face of the facts, it will take considerable evidence to convince the profession in general that the patient is in greater danger from this virus. The glycerinated virus is tested on animals, while the other is not tested; the former contains few germs, the latter contains many. Is it surprising that the profession has confidence in it?

We have also had considerable experience with both forms of the lymph. In our experience the liability to local ulceration and necrosis depends entirely on the freshness of the vaccine used. A very fresh vaccine, whether dried or glycerinated, is much more active, it takes in the majority of cases, the vaccinia will be more intense, and finally ulceration and necrosis are more liable to occur.

Thus, in vaccinating about eighty children in an orphans' home, it was found that the severe inflammations and ulcerations followed the use of a dried lymph, which had just been received from the producer. At the same time many children were vaccinated with a glycerinated virus, many of whom it failed to take, but in none of whom occurred any severe inflammation or ulceration. The result of our experience at that time was overwhelmingly in favor of the glycerinated vaccine.

Twice in the last two years the infants in the Bethesda Foundling Home have been vaccinated, altogether about two hundred inoculations. Here, too, the experience was borne out, that untoward results may follow either form of vaccine, provided it was fresh; vaccine which was old, that is, was kept at a moderate temperature for several days, took less often, but the severe effects were entirely absent.

From this experience, the lesson was positive, that severe inflammatory reactions are invariably associated with a strong vaccinia, and in no instance was a bad result obtained when the vaccine was weak or inert.

It has never been definitely proved whether ulceration and necrosis are due to the virulence or concentration of the vaccine virus (whatever that may be), or to some other infection. While we know of many germs producing suppuration, dermatitis, cellulitis, edema and fever, none is known that will produce local necrosis. Such re-

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sults must, therefore, in great measure be ascribed to the vaccine virus, either acting alone or with other micro-organisms.

No doubt the method of inoculation has some influence in this matter. When large abrasions in the epidermis are made, ulceration is much more apt to occur. The method of vaccinating by small puncture is to be preferred to the scarification method. This small puncture heals by the time the vaccinia begins, and thus a strong layer of epidermis protects the vaccine pustule.

Before a final judgment is pronounced on this question, clinicians should carefully record the age of the vaccine used, the method of scarification employed, and the percentage of successful inoculations; by this means a comparison of the different vaccines may be made, and a solution of this controverted question expected.

ORIGIN OF HYDROCHLORIC ACID IN THE STOMACH.

It is a dull day in the modern history of medicine when one of our favorite theories of physiology is not attacked or even overthrown. Many theories have been propounded to explain the formation of free hydrochloric acid in the gastric juice, and while many points in connection with its source are obscure, the student of medicine has adopted a working theory which seems to fulfill all clinical requirements. This theory, which it the most generally accepted, is Gamgee's modification of Maly's explanation. In brief, the acid is formed from the chlorides in the blood by the specific action of parietal or oxyntic cells of the gastric mucous membrane. These cells initiate a chemical reaction between sodium dihydrogen phosphate and sodium chlorid, resulting in disodium hydrogen phosphate and hydrochloric acid, the latter diffusing into the stomach.

Many clinical conditions gave support to this theory. In diseases of the mucous membrane the acid was found deficient or even absent. Infectious diseases which presumably caused an inactivity of the whole cellular organism, also induced a relative decrease in the acid secretion. Certain stimulants increased the secretion of this acid. A change was noted with the ingestion of various foods, and finally nervous disorders caused a great variation in the percentage of the acidity. Altogether the practitioner viewed the secretion of this acid as analogous to the secretion of other digestive fluids in that its presence depended on the action of specific cells irritated by the presence

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of certain foods, and controlled through nerve filaments by the central nervous system.

But Koeppe in his recent monograph, enthusiastic in the study of the phenomena of omosis, propounds the hypothesis that hydrochloric acid in the stomach in no way depends on the specific activity of certain cells, but depends entirely on certain osmotic processes. He holds that this acid is formed from the sodium chlorid of the food, and contrary to the usual belief, its source is never the blood. The gastric mucous membrane is regarded as a membrane which permits free sodium ions to pass into the circulation, but allows no free chlorin to pass the same direction. To translate his own words: "The source of hydrochloric acid is not the glandular cells, but the glandular cell wall, which, as a semipermeable membrane, has the specific characteristic in that it prevents the passage of Cl-ions, but allows the passage of free H-ions in the opposite direction. The necessary stimulus to the formation of this acid is the presence of free Cl-ions on the inner side of the gastric wall."

The conclusion is inevitable that the absence of free Cl-ions in the stomach results in achlorhydria.

It is questionable that this simple origin of the acid of digestion will be accepted. Its bearing on the diagnosis and treatment of gastric diseases is self-evident. But the clinician will probably not accept the dictum that the excess of acid in hyperchlorhydria is all formed from the salt ingested. Neither will he believe that the disorder may be cured by a withdrawal of this substance from the food. It will be interesting to investigate what causes this excessive diffusibility of the H-ions in this disorder.

In cancer, too, very important questions arise. What causes such change in this semipermeable membrane, so that the sodium and hydrogen will not diffuse? As is well known, this acid is absent or scant in this disease.

Yet this theory raises many questions which deserve study and experiment. Exact therapeusis necessarily depends on an accurate knowledge of physiologic processes involved. A change in our explanation of physiologic phenomena, is usually followed by a general change in therapeutic procedures. It will not be surprising, therefore, to note that hyperchlorhydria is treated by the entire withdrawal of salt, while an isotonic salt solution will be rationally administered for the apepsia of cancer.

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EDITORIAL COMMENT.

A New Factor in the Etiology of Malarial Fever.

With the discovery of the hematozoa of malaria and their method of entrance into the circulation, the study of this disease is by no means exhausted. The clinical phenomna are yet only partially explained. The relative immunity of certain individuals, its greater virulence in certain regions, its latency for many months, its tendency to recur after active treatment—all these subjects need further elucidation. An interesting contribution has been recently made by King (*American Journal Medical Sciences*), in which he points out a new factor, which has a marked influence on the development of the malarial paroxysms. He claims that the light of the sun determines the periodic sporulation of the parasites in the blood.

In proof for this assertion he points out that malaria is most severe in countries where light is the strongest, that malarial paroxysms almost always occur in the day and not at night, the immunity of the dark-skinned races, which results from the non-translucency of the skin; the increase of malaria in bright, sunny weather; and the popular tradition that sunlight causes a paroxysm of ague. He furthermore cites experiments which have been made by Harrington and Leaming on the common ameba proteus, in which it was found that red light stimulated their activity.

This study opens up a new field for study and observation, and every clinician can aid in corroborating or refuting this hypothesis. If true, it will greatly modify our treatment, and King suggests that a patient with malaria should be kept in a dark room, and wear dark clothing.

The Technique of Vaccination.

Too little attention is still given the technique of vaccination. A few words on this subject seem timely in view of the prevalence of small-pox.

The operative procedures may be divided, as in any surgical operation, in preparation of the patient, the operation, and after-treatment. The site selected for vaccination should be thoroughly cleaned with

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soap and water; if carefully and thoroughly cleansed in this way nothing more is necessary. But often it is advisable to use an antiseptic, and nothing has served us so well as alcohol. The arm, after cleansing, is washed with alcohol, which should be allowed to evaporate before vaccinating.

The glycerinated lymph is then blown on the surface in three to five minute drops. These drops should be placed at points at least half an inch apart where it is desired that the pustules should form. With a triangular-headed needle or an acne lance the skin is scarified through each droplet, each scarified area being about the size of a pin head. This method of producing small lesions is to be preferred, since infection, ulceration and necrosis is much less apt to occur than when a large area of the skin is destroyed. We are glad to see that Dr. Monckton Copeman, the originator of glycerinated lymph, recommends this method, which we have used for some time.

If the places are allowed to dry thoroughly, no protective dressing is necessary. Ordinarily, it is well to keep the clothing from rubbing the vaccinated area, by means of a shield. But the shield must be removed by the end of the second or third day. The shield must never be allowed to remain in place when vesciculation occurs. The vaccine shield is a dangerous dressing unless carefully used, and we prefer to use no shield in infants and children. When vaccination takes place, boric acid should be dusted on a piece of gauze or clean linen and applied with a loose bandage, which should be pinned to the sleeve.

Needless Laparotomies.

In spite of the great advance in the diagnosis of abdominal diseases, it must be admitted that errors are very frequent in differentiating the numerous conditions that may simulate each other. The great variety of affections, the numerous organs that may be involved, and the inadequate means of exploration make the diagnosis of abdominal diseases very uncertain. Clinically, two classes of diseases are to be distinguished; the medical and surgical. It is very important to distinguish, as soon as possible, between these classes; hence, the clinician, in an obscure case, attemps to place it in one or the other category. Even this, is by no means simple, and numerous instances are on record that demonstrate the necessity of weighing all cases with the

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utmost care. The mistake of opening the abdomen in cases of pregnancy, pelvic exudate, displaced uterus, and small ovarian cyst is familiar.

There is a group of symptoms which is usually taken as strong ground for operating. These are severe pains, persistent vomiting, swelling or tenderness that do not yield to ordinary therapeutic measures. But all these signs may be fallacious, and the abdomen has been opened in hysterical vomiting, tabetic gastric crises, and other conditions. Munro (*Boston Medical and Surgical Journal*) reports several cases in which medical diseases simulated surgical affections, and for which the abdomen was opened. These were acute phosphorus poisoning, hypertrophic cirrhosis, nephritis, alcoholism, obesity, and supposed pancreatic cyst.

This shows what a large variety of medical diseases may resemble surgical conditions, and should serve as a warning against hasty surgical diagnosis.

The Training of Nurses.

More attention and study should be given the training of nurses, and a general discussion on the methods used in various hospitals might lead to important revelations. It is a fact that two years' training in a general hospital does not always make efficient nurses in private practice. Too often the graduate nurse, though skilled in the routine of the hospital, can not adapt herself to the different environment of the home. Here the patient is not under the full control of the hospital, and is constantly impressed by the remarks and actions of the friends and relatives, which necessitates greater tact and firmness on the part of the nurse. Then, again, in the hospital the nurse follows the directions of the physician or superintendant, while in private the wife, mother, aunt, grandmother, and other relatives feel themselves bound to offer suggestions, and even insist on their own methods. Here it takes tact to permit measures which are not detrimental to the patient, reject harmful suggestions, and yet remain on good terms with the family.

This training is received only in private practice, and it seems, therefore, necessary to give a nurse some training in the home before she is graduated. After a period of training in the hospital, the nurse

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should be permitted to nurse a few patients in their home, under the supervision of one of the staff of physicians.

It is the usual custom, in addition to hospital duties, to instruct nurses by didactic lectures, which are given by the physician. While physicians can teach medicine, they are usually poor instructors in the art of nursing. Each training school should have two or more nurses on its staff of teachers. These nurses must have had several years' extensive experience in private practice. They can impart knowledge that few physicians can give. It is a mistake to have nurses taught only by the hospital nurse; since she knows little about the various conditions of the home.

DIAGNOSTICS.

Stiller's Sign, Floating Tenth Rib.

For a number of years, Stiller has maintained that a floating tenth rib is a pathognomonic sign of enteroptosis. Normally the tenth rib is firmly fixed to the ninth costal cartilage, not, however, as Stiller first thought, by a cartilaginous bridge, but by a fibrous connection. After death, as Tandler showed, the rib is quite movable, and its tip is separated from the ninth costal cartilage by a distance of from one-half to one centimeter. But during life in persons who are perfectly healthy, and are not predisposed to enteroptotic conditions, this space is not discoverable. In those having the costal stigma, the freely movable point of the rib may, during life, be felt at a distance of from one to three centimeters from the ninth costal cartilage. The condition with which the floating tenth rib is associated is that variously designated as enteroptosis, nervous dyspepsia, or Glenard's disease. It is characterized by a prolapse of the stomach, floating kidney, and a general tendency to descensus of the abdominal viscera.—*American Medicine.*

Gastric Pains.

Stiller says nocturnal gastric pains indicate hypersecretion; pains occurring in the forenoon suggest a nervous affection of the stomach; gastric cramps in mature, well-nourished women are most often due to gallstones.

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Small-Pox Rashes.

Roger and Weil state, with regard to the prodromal and secondary rashes of small-pox, that six varieties were recognized; namely, the erythematous, the urticarial, the morbilliform, the scarlatiniform, the purpuric, and the astacoid. These rashes were observed in about 20 per cent of the cases. They almost invariably precede the true eruption, and, except the purpuric form, disappear on the appearance of the true eruption. The astacoid rash is never encountered except in cases of the hemorrhagic type, and its appearance is a certain indication of a fatal result. This rash is also seen on the face, and in this respect differs from all the others. The patient has the appearance of a boiled lobster. It is a diffuse discoloration of the skin.—*La Presse Medicale.*

The Dartos Reflex.

McBride (*American Medicine*, February 15, 1902) calls attention to the dartos reflex, which is quite distinct from the cremasteric reflex. Both are obtained by irritation of the inner side of the thigh, the third lumbar sensory nerve. The dartos muscle is composed of unstriped muscle fibers and is supplied by the third sacral anterior root. The cremaster muscle is composed of striped muscle fibers, and is supplied from the second lumbar segment.

The dartos reflex is shown on a crinkling of the skin of the scrotum, and is to be distinguished from the lift of the testicle by the cremaster. It is more active in young men; it is more easily obtained when the parts are cool; it is very delicate reflex, though somewhat variable.

A transverse lesion between the third lumbar and the fourth sacral would abolish the dartos reflex, but would not affect the cremaster. A transverse lesion at the second lumbar would abolish the cremaster reflex, but would not affect the dartos. A lesion at the third lumbar segment would abolish both reflexes, by breaking the sensory part of the reflex arc. In a total transverse lesion higher up in the dorsal region, the striped muscle reflex (cremasteric) would be abolished, while the unstriped muscle reflex (dartos) would be preserved.

The Real Significance of the Enlarged Epitrochlear Gland.

In an editorial (*Pediatrics*, January 15, 1902) the significance of the enlarged epitrochlear gland which is generally given as a pathog-

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nomonic sign of syphilis, is discussed. There is not much doubt that the belief of its diagnostic value in syphilis is erroneous. In a large dispensary more than 1,200 consecutive cases were examined. In about 60 per cent of the cases both glands were found to be enlarged. In about 10 per cent more, one gland only was enlarged. In scarcely one-tenth of these cases could any evidence of syphilis be elicited.

The causes are mostly non-specific; bacterial infection of the hand or forearm, eczema, psoriasis, and furunculosis; then leukemia, scrofula, and other conditions associated with lymphatic hyperplasia. The opinion would seem to be justified that the special connection of syphilis with epitrochlear lymph nodes is a "fallacy of observation."

The "Fourth Disease."

Considerable interest is being taken in the so-called "fourth disease" since the publication of Duke's observations. The main points which may be utilized to distinguish this disease from scarlet fever are: Its prolonged period of incubation (9 to 21 days), absence of prodromal vomiting, the low pulse rate, absence of characteristic tongue, the conjunctivæ pink and suffused, and the absence of serious sequelæ.

Symptoms of Deciduoma Malignum.

Hemorrhage is almost invariably present, according to Ladinski (*Medical Record*, February 15, 1902), and is very characteristic. It appears without apparent cause, the discharge is bright fluid blood, and does not yield to the ordinary treatment. The uterus is enlarged, the os patulous, and the anemia extreme. If a molar growth is found in the womb, it should at once be examined microscopically.

Splashing Sound in Relation to Atony and Gastroptosis.

Kuttner (*Berliner Klinische Wochenschrift*, December 16, 1901) urges that it is necessary to differentiate between the splashing sound and the stomach murmurs. The first is best elicited in the horizontal position, and occurs whenever air and fluid are in the stomach; the murmurs are produced most often in the upright position when the stomach contains gas, by the contraction of the muscles. The latter are of no diagnostic significance. Splashing sounds heard soon after the ingestion of fluid have no significance; but if elicited hours after the ingestion of fluid it is of great value. Then it signifies atony of the stomach or even motor insufficiency. These conditions must be

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distinguished. If the sound is audible during the process of digestion atony is present, if it persists longer motor insufficiency should be suspected. Atony of the stomach is a laxity of the muscular walls. Gastroptosis may follow simple atony.

Percussion of the Lower Border of the Liver.

Abrams (*Medical News*, February 8, 1902) asserts that it is never safe to declare the liver enlarged unless it is palpable. He recommends the following simple procedure for mapping out the lower border of the liver: The patient should incline his body backward as far as possible, while supporting himself, with his hands resting on his hips. Then percussion, which must be light, will determine the lower border of the liver with little difficulty. Strong percussion will cause neighboring hollow organs to vibrate. The finger must be firmly imbedded in the abdominal wall, otherwise the blow will not be transmitted to the liver. The bowels must be thoroughly evacuated before the examination.

How to See the Stomach Curvatures with the Naked Eye.

Knapp (*New York Medical Journal*, February 15, 1902) declares that the stomach curvatures may be seen. For the purpose of such inspection, the patient bares his abdomen and lies down on a table in the usual dorsal position. The examiner now stands, either at the side or at the shoulder of the patient, so as to have either to look up to the stomach region or down it. He now brings his eyes on the same level with the prominence of the patient's abdomen and watches abdominal respiration with one eye, or both. The patient now breathes in a normal way, and the examiner follows certain lines which he sees move up and down with the respiration. The curvatures of the stomach will be distinctly seen as very fine lines which are moving under the skin with the respiration. Mark with ink where such lines constantly stop, and corroborate by percussion. An acute observer will not fail to notice that there is also a distinct difference in the plane of the abdomen where the curvatures are seen.

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THERAPEUTICS.

In Charge of
W. L. JOHNSON, M.D., and A. LEVY, M.D.

Climatology.

Craig (*Journal American Medical Association*, January 25, 1902), in an article concerning "Climatography of Arizona," maintains that climate, as affected by mere latitude, seems to have no influence on disease. In those localities where a relative immunity from tuberculosis exists, the climatic conditions are such as to allow or compel their inhabitants to live largely an out door life. "The place having the most sunshine, least moisture, and most even temperature is the ideal spot." Arizona, Dr. Craig thinks, very nearly fulfils these conditions, and as the manifold climatic advantages of this Territory are becoming more and more clearly recognized by the medical profession in the East and North, the tide of winter travel is tending in that direction.

The temperature is higher than in some regions of the Mississippi Valley by an average of fifteen to twenty degrees in summer, and by thirty to forty degrees in winter. The relative humidity is so low in summer, however, that the sensible temperature is five to ten degrees lower in Arizona, that is, the sensibility of the human body to heat is really less in Arizona than in Illinois. The low percentage of humidity is striking, having been as low (relative) as one per cent, when at a corresponding time it was fifty and sixty per cent in Chicago and Eastern cities. The average daily sunshine in Davoplatz, Switzerland, is given by Knopf as 4 hours and 16 minutes for November; in Phœnix, the average, as shown by the United States Weather Bureau for the same month, was 9 hours and 12 minutes.

"Pure and abundant air, both day and night, in-doors and out; such good and plentiful food as a simple, open-air life may enable a patient to digest; rest, frequent and complete; a long night of sleep; an hour's rest after walking, additional rest when the individual may require it; and in all cases absolute avoidance of fatigue." This is the conclusion of the whole matter in climatic and hygienic treatment of tubercular disease.

James K. Cook (*Philadelphia Medical Journal*, January 11,

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1902) gives a descriptive account of "Florida in Winter." He arrived in Jacksonville in February, 1901, on a day barely distinguishable from a New York March day. The temperature was 31°F., overcoats and wraps decidedly comfortable. However, there were plenty of flowers in bloom, and peach and plum blossoms were alive, "but they looked like they would like to come in-doors." This was an exceptional morning, and before noon the mercury was 40°F. A comparison of temperatures between New York City and Belleair, Florida, from Jauuary 15 to February 28, 1901, shows the average temperature of New York City to have bee 27.93°F., while that of Belleair was 60 61°F. While New Yorkers were housed up, Florideans were playing golf, and enjoying out-door exercise in other ways. Cook believes that persons suffering from most forms of chronic bronchial and pulmonary complaints, are better off in Florida than in the North, during the winter months. Many cases of early phthisis, he thinks, are not only arrested but permanently cured by a timely resort to the favorable surroundings found in many localities on the Peninsula.

Glycero-Phosphates.

Weber (*Milwaukee Medical Journal*, November, 1901) states the glycero-phosphoric acid found in the market in the form of a 20 per cent solution is very unstable, decomposing gradually into glycerin and phosphoric acid. The neutral salts are quite stable, are soluble in water but insoluble in alcohol. The distinctive feature of these salts—of sodium, potassium, calcium, etc.—lies in the glycero-phosphoric acid. This acid is found pre-formed in the blood, flesh, brain and nerve tissue. This acid and neurine forms lecithin, while nucleinic acid contains a neucleus of glycero-phosphoric acid.

De Pasqualis, Bülow and Robin demonstrated that the neutral salts of glycero-phosphoric acid are directly assimilable, that they have a wonderful effect on nutrition, and that the acid represents chemically, exactly that form in which phosphorus is taken up into the human system.

The therapeutic indications are rachitis, phosphaturia, gout and uric acid diathesis, anemia and chlorosis (for both the acid and base are therapeutically active), and nervous diseases.

[The reviewer several years ago used the phosphoglycerate of lime in a severe case of purpura rheumatica, with apparent benefit. See *New York Medical Journal*, October 7, 1899]

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Prescriptions.

Infantile bronchitis:

℞ Tinct. nucis vomicæ..... gtt. xvj
Tinct. digitalis..... gtt. xvj
Liq. peptonoids cum creos..... ʒiv
Aquæ gaultheriæ.....q.s. ad ℥ij

M. Sig.—ʒj every four hours (for six month's child).

For cyanosis and cardiac inadequacy of infantile bronchitis: Mustard paste, 1 part mustard to 5 parts flour, warm water q.s. to make a paste; over entire chest until surface well irritated.

Also, internally.

℞ Spir. glonoini..... gtt. iij
Spir. frumenti..... ʒij
Aquæ menth. pip..... ʒij
Aquæ.....q.s. ad ℥j

M. Sig.—One-half teaspoonful p.r.n.

For infantile bronchitis, with symptoms of suffocation: Place child under tent and "steam" with beechwood creosote 5 to 20 drops to a quart of water. Keep under for twenty minutes every hour or two until marked improvement.

Sore throat of scarlet fever, spray with:

℞ Sol. boroglyceride..... ..... ʒj
Peroxid hydrogen..... ℥j
Aquæ gaultheriæ.....q.s. ad ℥ij

M. Sig.—Spray throat every hour or two.

Or:

℞ Hydrogen peroxid.....
Aquæ calcis..... *aa* ℥j

M. Sig.—Spray.

For itching of scarlet fever:

℥ Ung. picis liq..... ʒj–℥j
Ung. zinci oxidi..... ℥j
Vaselin albi..... ℥j

M. Sig.—Anoint as needed, once or several times daily.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of November 7, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

DR. R. F. AMYX read a paper (see page 185, this issue) on

A Gunshot Wound of the Intestines.

DISCUSSION.

DR. E. A. SCHARFF said the result in the case reported by the essayist was particularly interesting because of the fact that during the speaker's stay at the City Hospital he saw from twenty to thirty Murphy buttons used without a single good result—all were removed at the dead house.

DR. HENRY JACOBSON said the use of carbolic acid with seidlitz powder was something new to him. We would naturally suppose that with the systemic shock from the insult to the peritoneum and bowels the heart would also suffer as carbolic acid is a decided heart depressant; the two acting together would diminish the chances of recovery; it was a good feature, however, in being anesthetic and thereby preventing vomiting. We usually depend upon salines or the antiseptic and laxative effect of calomel. He mentioned the new analgesic, chloretone; he had given this to patients before the administration of chloroform, to prevent vomiting, with good resu'ts, and believed it could be used in this class of cases. He asked if the intestinal contents escaped into the peritoneal cavity, and if so, were they mopped out or irrigated by saline douches.

DR. REDER said he was much pleased to hear the essayist lay special stress upon drainage of abdominal wounds caused by bullets. He asked if there was anything on the drain after its removal that would lead to the belief that the case would have progressed favorably without drainage. With these injuries to the abdominal cavity, even

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if we take the greatest precautions in cleansing and find nothing to drain, we do not know the future development of the case. The human economy is very peculiar in that respect, and in three to six days after the injury is inflicted there might be something which requires drainage. We depend much upon the microscope, but the microscope does not give us the most positive assurance; there is still something further than the microscope reveals to us to day with all the great developments secured by that instrument. The number of perforations sustained by this man and the recovery following operation makes the case very remarkable. It is really fortunate that the Doctor discovered all the perforations; it was fortunate for the individual that no important vessel was in the path of the bullet, He asked if nutritive enemata were given, and if so, what was the character of them.

THE PRESIDENT said that with indulgence of the Society he would speak briefly on the paper under discussion. He thought that Dr. Amyx deserved rather unusual praise. Such a grave case rarely recovers, and the favorable outcome speaks highly, not only for the attending skill, but also for the extraordinary resisting powers of the patient.

Without doubt, the policy of performing abdominal section for perforating abdominal wounds occurring in civil practice is a conservative procedure. The development of military surgery has, however, moulded a line of action which is quite at variance with the thought of non military operators. Time will not permit anything like a critical survey of the growth of military surgery, even in the comparatively limited field of abdominal work. Suffice it to say that during the Crimean war the mortality of the English troops with perforative abdominal wounds was 92.5 per cent; of the French 91.3 per cent. During the American Civil war gunshot wounds of the intestines produced a mortality of 90 per cent, during Kitchener's invasion of the Soudan, 5 abdominal wounds received operation, 5 died, mortality 100 per cent. Senn reports during the Cuban campaign 4 abdominal sections with 4 deaths, mortality 100 per cent. United States Army Reports show during the Hispano American war 116 cases of perforating wounds of the abdomen, of which 81 died, mortality 70 per cent; a group of 10 cases which received operation of which 9 died, mortality 90 per cent.

The extreme exigencies prevailing in the South African, Cuban,

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and Phillippine campaigns presenting abdominal sections (attended by modern precautions) have produced a class of cases which have received practically nothing beyond stimulation, surface cleansing and rest; the results as a whole have been surprisingly gratifying. Many cases, though handicapped by most serious and extensive lesions, have recovered, and that, too, frequently without complications, and in a comparatively smooth, uneventful fashion.

Robinson reports from the Philippine campaign records a group of 45 cases in which the mortality was 48.9 per cent, and another of 30 cases, not operated upon, in which 10 died, mortality 33 1-3 per cent. This, he claims includes wounds of the intestine, liver, bladder and stomach, and that the recoveries were unusually uneventful. The English, too, in their African campaign have been repeatedly astonished at the remarkable results accruing from a non-operative policy in abdominal work. Many factors contribute, among others, the relative emptiness of the stomach and bowel of the soldier in action, the vigor incidental to an out-of-door life, the comparative cleanliness of the bullet, its smooth surface, small caliber, high velocity (with the various wound peculiarities resulting therefrom), the collapse of the walls of this small bullet wound, satisfactory and sufficient lymph exudative processes, the quick sealing of the external wound by coagulated blood (in dry climates) and, finally, the use of the first-aid packages. It requires but a moment's reflection to observe that abdominal wounds of civil life are not of these characteristics. Are we to anticipate that conservative civil surgery of this region will markedly change its plan of attack? Hardly; for while in military surgery the soldier as a patient has the advantage of the civilian; in civil surgery the advantage of surgical equipment and surroundings is incomparable. The greater gravity of the condition of the civil patient. *per se*, must therefore be met and overcome by our more complete surgical equipment. Yet it is well for us to give our patients the benefit of the doubt, abdominal section should not be made the unvaryingly rigid mode of procedure. Selected cases, without doubt, may be counted upon to recover under the waiting policy.

The speaker added that he had had a limited experience with chloretone both upon animals and man. During operative work upon animals the results varied widely. At times a most attractive anesthesia was produced; yet, on the other hand, without apparent cause, the

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result would be highly unsatisfactory. Dogs have been encountered that would require two or three times their proper and usual dose and yet from a half to three-quarters of an hour would be needed to produce unconsciousness sufficient for surgical manipulations. One undoubted advantage lies in its prolonged period of lethargy, frequently lasting from 24 to 36 hours. He considered it not an unvaryingly reliable preparation. He did not indorse the statement that carbolic acid was a cardiac depressant sufficient to demand watchfulness; he considered it compratively inoccuous in doses indicated in combating nausea.

DR. HUGO EHRENFEST said that when Sir Wm. MacCormac, the well-known surgeon, returned from the Transvaal he made the statement that all cases of perforative abdominal wounds operated upon, died, and that all cases not operated upon, recovered. This statement, of course, created quite a sensation and was apt to overthrow the routine treatment of perforating abdominal wounds. A German surgeon, who was in the Transvaal with the German Red Cross Expedition, wrote an elaborate paper in which he tried to show that the rules which experience made necessary in the Boer war were not applicable to perforating abdominal wounds inflicted during times of peace. He brings up three points to show the difference between wounds suffered in war and those inflicted during a quarrel between individuals. The first thing he mentions is the bullet itself. In war, steel bullets, while in ordinary times lead bullets are used; these produce quite a different wound from the steel bullet. Second, in war-times wounds are inflicted usually at a time when the intestinal tract of the soldier is more or less empty. That makes a great difference and this German surgeon emphasizes this point and said that the English soldiers, as a rule, were in a bad plight and could hardly get anything to eat before going into battle so that their intestines were really entirely empty. He made referencé to the old rule in France, that before a man goes to meet another person in a pistol duel he always takes a dose of castor oil. He asked Dr. Amyx if he could say at what time of the day, or how long after eating, had the wound been inflicted in the case reported. The third point brought out by the German surgeon was that operation, as a rule, was performed under most unfavorable circumstances. He stated that he was present at a laparotomy performed in one English hospital, and said there were so

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many flies in the operating room that the moment the gut was pulled out of the wound it became black with flies. Of course, under such conditions we would not expect good results. In conclusion, he states that the rules given for practice in war are not applicable to wounds inflicted in time of peace.

DR. GRADWOHL, in corroboration of Dr. Ehrenfest's remarks, said he read this paper some time ago, which was very interesting, and goes far to show that the conservatism spoken of by the President should be observed even in some cases in private practice. He thought it would be wise in cases where the shock is slight and the intestinal contents had not escaped, that the surgeon should keep his hands off at least for a day. The exudative material thrown out will go a long way toward repairing perforations from bullets of small caliber. The attempt of Nature to close up these perforations is further facilitated by exudation.

DR. GELLHORN referred to an article on gunshot wounds of the pregnant uterus recently published by him. One of the cases which was operated upon by Albarran, of Paris, resembles somewhat the extraordinary case reported by Dr. Amyx. The intestines in Albarran's patient showed four wounds in the superior part of the ileum, lying two by two and each pair 20 cm. distant from each other. Albarran resected the whole injured portion of the intestines and sutured a fifth wound in another intestinal loop. In the anterior wall of the uterus there was found a bullet hole through which a loop of the umbilical cord was hanging. The wound of exit was found low down in the posterior wall of the uterus. Albarran resected the protruded loop of the umbilical cord, replaced the stump and closed the two openings in the uterus; 24 hours after the operation the patient expelled the fetus. Recovery was undisturbed and perfect.

DR. SCHARFF mentioned an interesting case seen at the City Hospital. A woman, six months pregnant, shot herself through the abdomen the bullet penetrating the uterus and also passing through the arm of the fetus. She was operated on three-quarters of an hour after the injury, Cesarean section being performed. The child lived about eight hours, but the woman made a perfect recovery.

DR. V. P. BLAIR asked why the bichloride pack had been used for eight days after the operation. The German surgeons of the present day, he said, use a strong solution of alcohol to produce a hyperemia

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of the abdominal wall in cases of peritonitis. Some even go to the extent of returning to the old method of blood-letting. Leaving the bichloride pack on the abdomen for eight days, the speaker thought, there might be danger of poisoning by absorption. If the abdomen was made perfectly clean before the operation, and it is legitimate to suppose that all the organisms were not killed, a pack applied for 12 hours afterwards would have accomplished everything desired. He did not wish to be understood as criticising the method but wanted to know the object of such continued application.

DR. AMYX, in closing, said the object of leaving the pack on so long was to obviate the influence of any material that might have gotten on the abdominal wall while it was exposed to the air in changing the dressings. The discharge from the wound through the drains was of a bloody character for the first few days or so. The drains were not removed for five or six days; by that time the substance on the drain from the peritoneal cavity was slightly purulent; this continued until the drains were removed permanently.

No nutritive enemata were given because of the perforation in the sigmoid flexure. He was nourished wholly per os, using sometimes albumin water and milk, and lime water and milk. There was some intestinal contents in the peritoneal cavity, but only a little. He asked the patient if he had eaten supper and he replied that he had not taken food since 12 o'clock noon, so that the intestines were practically empty, except the sigmoid flexure, where there were several large pieces of fecal matter; it was the presence of these lumps that led to investigation of the sigmoid flexure and the discovery of the perforation. He gave one-tenth of a grain of calomel every hour until one grain had been taken.

The pack, as stated, was not applied for the purpose of a counter-irritant. The Hospital, as we all know, is not altogether favorable for operative work, so he adopted the rule of always applying a bichloride pack.

In reference to gunshot and knife wounds of the abdomen, for six years at the City Hospital, up to 1899, he had collected 110 cases, which he submitted to Dr. Matas, of New Orleans. Of these, 35 were simple penetrations without perforation; in these but few operations were performed. In most instances the wounds were enlarged in order to remove the foreign material from the track of the bullet and a drain instituted, which was left from three to five days, then removed.

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Of these cases 95 per cent recovered. Of the 110 cases, in which there was perforation, 8 were of the stomach only; 2 recovered, and 6 died. All were operated on. There were 67 cases of perforated intestines, stomach, or some one of the solid viscera, with one or other of the hollow viscera. Of these 23.5 per cent recovered. Most of the wounds inflicted were made by bullets from the ordinary pistol, and in these cases the bullets were soft material, so that there was a great deal of laceration and contusion. There were but few cases that did not show marked signs of shock.

The bullets used in a Mauser rifle are steel covered bullets, and have a greater velocity than the ordinary pistol balls, so that the wounds inflicted by these guns are of a very different character to the wounds produced by a soft bullet, with less velocity. The treatment is, therefore, entirely different. There should always be positive evidence that an organ is wounded, before it is reported as such.

He mentioned the case of a saloonkeeper who was stabbed in the left lumbar region. On examination the spleen was found to be injured, and the upper portion of the kidney was cut. Palpation of the peritoneal cavity did not reveal perforation in the splenic flexure of the colon. He put in a drain and waited until the next day. He then found that there had been bloody stools, so the patient was removed to the hospital, the cavity opened at the original site, and the splenic flexure investigated. Nothing was found, however, but a simple contusion of the parts, from which blood was oozing, this causing the bloody stools. The patient recovered without further operative procedure. The manner of cleaning the peritoneal cavity of intestinal contents in the case reported this evening was as follows:

After closing all the perforations and making the anastomosis, the intestines were wiped with a piece of gauze. All of the foreign material that could be seen was removed in this way.

The course of the bullet through the abdominal cavity being a long one, I decided to flush the cavity with normal saline solution. After doing this, the drains were placed and the abdominal wound practically closed. The reason for using the carbolic acid in the above case was to relieve the excessive vomiting, and at the same time offer a means to lessen the fermentation that so often exists in such a case. Five to eight drops in 24 hours did not produce any depressing effect on the heart. Other cases having wounds of the intestines and other

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viscera were given carbolic acid, with no apparent depressing effect on the heart or respiration.

Meeting of December 5, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

DR. L. J. OATMAN, reported a case (see page 192) of

Senile Gangrene.

DISCUSSION.

DR. HOWARD CARTER asked if any member could suggest why such an excellent result should follow in the case reported, where the condition of anterio-sclerosis was so pronounced. He said it was a remarkable recovery. The speaker thought these cases, as a rule, were inoperable.

DR. J. C. MORFIT said the result in this case was certainly very flattering. He complimented the essayist for giving ample time for the line of demarcation to appear. He thought the reason why the primary operation at the metatarsal joint was not successful was probably because it was not done aseptically. The later operation must have been perfectly aseptic, because union took place by first intention, even though the vitality of the patient must have bern considerably lowered. Then, too, in all probability the leg was at its best, as regards nourishment from the blood supply; because, no doubt, sufficient time had elapsed before operation for the collateral circulation to establish itself. In other words, nature had accomplished everything toward amputation, except the mechanical removal of the diseased limb.

DR. OATMAN said the only reason for reporting the case was the surprising result. It is now seven months' since the operation. He advised against an artificial foot, but the patient insisted upon having this, and has been walking on it now for four or five months. The patient is in good health at present. When the leg was amputated, it was found that the vessels were so brittle that they could be tied only with great difficulty. It is one of those cases where it is difficult to explain the prompt healing.

DR. L. BREMER demonstrated

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Artefacts of Blood Examinations.

The nature of the subject would exclude the possibility of presenting it in the form of a paper, and what you see is nothing but the reproduction of pictures, as they were found under the microscope.

The present state of hematology is in a chaotic condition. A great deal of this confusion and chaos is due to the fact that the man who is the most competent to speak on a subject like this, the man who is called the father of modern hematology, has gone out of this work, at least so far as the micro-chemical and pathological phase of it—I mean Ehrlich.

What do we understand by an artefact? An artefact in a microscopic preparation is one that will impose itself on the mind of the observer as being something specific and characteristic, but which is found, after repeated examinations, to be the product of certain circumstances or agents which temporarily have their effect. These artefacts play a great part in modern publications on blood. All sorts of things seen in the blood have been described as characteristic of this or that disease, especially as far as the micro-chemistry and morphology of the red-blood corpuscle is concerned.

Ordinarily we find the red-blood corpuscle is represented as a disc with a central depression. If that disc should present a frontal aspect, we would see a different shape. A common artefact is a circumscribed ring in the center of the corpuscle containing no hemoglobin. Some artefacts are due to the manner of spreading the blood.

The method of spreading blood generally recommended is to take two glasses, drop the blood on one and cover with the cover-glass, and then separate the two glasses. I claim that this is a very fruitful source of artefacts because that drop, if it is too small, will cause a powerful adhesion between the two glasses, and you will have great difficulty in separating, so great that it is almost impossible to do. There is an immense amount of pressure in consequence of the adhesion between the two glasses. On the other hand, if the drop is too large we get a very unsightly preparation, which at one point will be very thick, at another not noticeable. To avoid this condition, I have devised a wave-like fashion on the drop. This will allow a study of the red blood-corpuscle in all sorts of conditions which manipulation will produce, and also in conditions where manipulation has not been at work. The drop is placed on a slide, and then the upper slide is

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moved in a wave-like fashion, thereby producing hills and dales. Of course, it must be done in such a manner that the destruction of the red blood-corpuscle is as insignificant as possible. By this method, in the several layers, the corpuscles will be formed in a variety of positions and shapes. The uncolored part of the red blood-corpuscles is the nucleus without a chromosome.

In the valleys of these smears there is little serum and in consequence of this rapid drying process the hemoglobin is forced into the nucleus. The characteristic morphological aspect is preserved in the parts of the smear that contain more serum and do not dry so rapidly. When the red blood corpuscle is looked upon vertically it will present projections on either side. This is probably the central vesicle. It is not an artefact but a real constituent. The mulberry and thorn-apple forms are familiar artefacts.

Certain physicians have found nuclei in some red blood corpuscles; it is mostly hemoglobin squeezed into the central vesicle. In some red blood-corpuscles a peg projecting from the circumference to the center is found; it is the result of the spreading process and all point in one direction. It is the inherent property of the hemoglobin to assume the spheroidal shape, hence many small globules are seen when red blood-corpuscles are destroyed. Red blood-corpuscles very rarely contain chromosomes.

By the process of compressing in preparation various forms are produced. The hemoglobin may be squeezed out of the red blood-corpuscles and it assumes a variety of forms. The vulnerability of the corpuscles varies in different conditions. Sometimes a trabecular formation is found; it is most commonly a nucleus.

Folding of the corpuscles produces a peculiar shape. Occasionally a perforated corpuscle is observed; pieces of hemoglobin may be torn off.

Another constituent of the blood are the platelets; they have been variously interpreted; they are not artificial bodies; they have a nuclear center and stain differently from the red blood-corpuscles. These bodies contain chromosomes, which the speaker had discovered several years ago; but the central part is white and unstainable; this is a minute globule. Several years ago the speaker had demonstrated that the platelets were nuclei which are in a rudimentary form in normal red blood-corpuscles, but which resume their former activity on the death

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of the cell. The common picture of several platelets attached to a cell does not signify that all come from this cell; one platelet only arises from one cell.

The speaker demonstrated the various stages in the life history of the platelets.

Leucocytes also change their shape and appearance if an alkaline or neutral stain is used; in the former case the nuclei are very prominent.

DISCUSSION.

DR. CHAS. SHATTINGER said his attention was attracted immediately by the corpuscles in the second chart with the spot of hemoglobin in the center, which Dr. Bremer had explained as due to the pressing in of the detached globule of hemoglobin. He had seen just such a condition exemplified in a case, about a year ago, of a girl who had chlorosis. He had subjected specimen after specimen to an examination and in every instance this appearance was present and it had puzzled him. He used the different dyes but soon convinced himself that this central body was unstainable by the neutral dyes and took on the acid stains. He then became suspicious that he was dealing with an artificial product and set about studying the matter. He examined the first specimen which had been previously prepared and was surprised to find this same globule in the center.

Another specimen of blood was taken with the utmost care and examined for this spot, and in every specimen taken from this patient, whether stained or examined unstained, he invariably found a number of corpuscles with this appearance. Under these circumstances the logical conclusion seemed that he was not dealing with an artificial product; he could not think the hemoglobin had been pressed in, he did not see how this could have been done in so many specimens, or even in any of them where practically no pressure had be used. The matter remained inexplicable to him, and when he saw the picture he felt that some explanation was promised, but he was still in doubt, and he asked Dr. Bremer for his opinion of the condition mentioned, bearing in mind that the condition was found in a so-called fresh preparation as well as in so many instances.

He also asked Dr. Bremer's opinion of the examination of blood in liquid vaselin. This method had been recommended and the speaker had tried it on a number of occasions. The method does not permit

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of staining but has the advantage of examining the blood in a condition nearly akin to what it is when flowing in the blood-vessel. The first time he tried this method it required extra care in catching the drop exactly in the center of the vaselin and covering it with another drop of the liquid vaselin without having come in contact with anything else. He was astonished at the appearance of the blood—the softness and pliability and the extreme ease with which the corpuscles could float in that medium; it seemed even superior to what is seen when the blood is examined in the web of the frog, or in the blood-vessels themselves He had since resorted to this method with enthusiasm, not as a means of clearing up the details of morphology but as a means of noting the different appearances of the blood.

DR. HOWARD CARTER said he had observed in fresh specimens the condition shown in the first picture; he was familiar with this particular specimen but he had almost always failed to find it in the fresh specimen and never in the vertical position. He had found another artefact in the blood of a patient on several occasions which took on this form, but his experience was not the same as Dr. Bremer's, that all pointed in the same direction, because in his case there was formed a complete cross as though four or five corpuscles had coalesced. This particular form he had seen in the blood of one patient on several occasions and he did not believe it was due to the manner of smearing. He had modified the method of smearing suggested by Dr. Bremer as he does not use a cover glass in smearing. He uses a spatula made from celluloid and gets the drop of blood along the edge of the spatula and without exerting any pressure on the under side he gets an almost uniform smear with exceedingly few artefacts. He said there was an article published in a recent number of *American Medicine*, which was, if nothing else, at least amusing. The writer had been deceived by crenated corpuscles and described them as germs.

We all fall in the error of mistaking these artefacts for something significant. He had examined hundreds of specimens and had himself fallen into this error, particularly in examining blood for malaria. His notion of the frequency of malaria has been badly shattered by these examinations; he had examined the blood of nearly every patient giving a history of chill and fever, and the plasmodium was seen in a very small percentage of the cases, but artefacts were found in abundance.

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DR BREMER, in closing, said he had been in the same position in regard to the central knobs, as Dr. Shattinger. He had seen thousands and thousands of these films, and concluded they must have some clinical significance, but when he looked at a distinct part of the specimen he could not find them. That is where the rub comes. We may see these things with regularity in certain areas and think they mean something. For a long time he believed they had a morphological and pathological significance, but when he paid closer attention to them and looked for the other side, he finally concluded they must be artefacts. He said there is a possibility that, in consequence of mechanical injury, certain forms are more readily injured than the blood of the healthy, and we do see this formation in the blood of diseased persons when it is not found in healthy blood, but in the fresh specimen he had been unable to discover it, unless it was after air had acted on the specimen.

The corpuscles are extremely delicate structures, and can be disarranged, injured and disfigured by a breath of air, and more so by mechanical injury. He said he was not familiar with the liquid vaselin preparation, so he could not speak of that method. The celluloid spatula he considered a good thing, and had employed it, but it can not be cleaned readily.

Malaria, he thought, comparatively scarce. Out of ten cases of pronounced malarial conditions, he believed there would be demonstrated but one case of real malaria. Some years ago he read a paper on the abuse of the term malaria, and the habit of giving enormous doses of quinine. He protested at that time against the indiscriminate use of quinine, there being many conditions with chills and fever that are not malarial, and are now called autoinfection, and some cases, where the history of the case shows the attacks, come with the regularity and periodicity of malaria. In these cases he has hunted for the plasmodium, and been astonished at his failure to find it, so that he came to the conclusion that malaria is almost a myth in this part of the country. He had even visited the City Hospital and examined the many patients giving this history, and the cases had been diagnosed malaria, without finding one true case of malaria. This is very strange, and does not seem to agree with the present idea of the transference of malaria by the mosquito.

The artefacts found in supposed malarial blood, spoken of by Dr.

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Carter, the speaker had often seen. Some very remarkable specimens have been sent him by out-of-town physicians to demonstrate the presence of plasmodium, and often the place where the plasmodium could be found was marked. Some most incredible things were seen under these circumstances, even down to a piece of dirt, which had been looked upon as the plasmodium.

DR. CHAS. J. ORR read a paper (see page 189) on

Laryngeal Crisis in Locomotor Ataxia.

DISCUSSION.

DR. W. E. SAUER congratulated Dr. Orr on making this diagnosis so early. While it is true that in the adult, one of the first causes of laryngeal spasm is given as tabes, there are many other causes, and a diagnosis of tabes is made only after a long observation of the patient. We often see laryngeal spasm in perfectly healthy persons. Among other causes are hysteria and neurasthenia, especially in women. He had seen tracheotomy performed in a severe case in order to save the life of the patient. Gower states that laryngeal spasm is next in frequency in tabes to gastric disturbances. In 100 cases of tabes the larynx was involved in 14. Gerhart reports 122 cases of tabes with involvement of larynx in 17. It is exceedingly difficult to make a diagnosis of tabes in these cases, especially in the beginning, and then only by exclusion, unless, of course, other tabetic symptoms are pronounced. In this case there was nothing but the cough and history of lues.

DR. BREMER thought the case really one of tabes. The signs may be there in their incipiency, in an abortive state, but we are unable to perceive them. He thought that when one has heard the peculiar cough, so characteristic of laryngeal crisis, it is never forgotten, and he knew of nothing to compare with it. He thought this peculiar affection was more often found in juvenile tabetics than in older ones, that is, in persons with a syphilitic infection, dating back not more than four or five years; where the infection is fifteen to twenty-five years old, this is not so. Referring to the usual treatment of syphilis, namely, the use of iodid of potassium, as mentioned by the essayist, the speaker did not think the iodid of potassium treatment the proper treatment. There may be conditions simulating tabes, but which in reality are due to the syphilitic infection, such as a neuritis, or the formation of gummata or inflammations of various kinds,

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when the antisyphilitic treatment is in order. He doubted, however, that any real benefit would be derived from the use of iodid of potassium or soda, or other salts, in an ordinary case of tabes, that is, where the sclerotic and degenerative changes are already in process. He rather thought they would do harm. This, he thought, is often seen in patients who have returned from Hot Springs, even where the injurious effect of the hot-air baths have been sustained. The patient is put on a thorough course of iodid of potassium, and when he returns he is worse than ever, or soon afterwards he shows the ill effects of the treatment, and sometimes the condition is even grave. The iodid in these cases is a destructive poison, and the outlook for the patient is not nearly as good as if he had been let alone. This is the result of his observation during many years, and after watching a great many tabetics. His conviction is that the iodid of potassium is a deadly drug for the tabetic, except in such cases where the characteristic lesions of syphilis of the spinal cord or brain give rise to the picture without there being tabes. These remarks, however, were not by any means in the nature of a criticism upon the treatment of the case mentioned by the essayist—merely an exchange of experiences.

DR. ORR, in closing, said his experience in the treatment of tabetics was limited. Dr. Bremer stated that in cases in which there has been true degeneration, the iodid not only does no good, but is harmful. This, the speaker admitted, but the best writers on the treatment of locomotor ataxia whom he had consulted, based upon these facts, namely, that the majority, if not all, cases of locomotor ataxia follow upon syphilitic infection, that when degeneration has taken place nothing avails, but where a syphilitic condition exists, either in the restoration of tissues where degeneration has not taken place, or in tissues proceeding to a degeneration, the iodid does prevail, and that is the position he took. In this particular case he said it might be taken for granted that a limited degeneration had taken place, but a restoration with only a partial destruction or a prevention of the spread of the degenerative process, is the object to be attained.

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Meeting of December 19, 1901; Dr. Norvelle Wallace Sharpe, President, in the Chair.

DR. C. FISCH read a paper (see page 161) on

Agglutinins.

DISCUSSION.

DR. GIVEN CAMPBELL said the Society was to be congratulated in having heard this very able paper. Work along these lines is becoming so specialized that one not engaged in this kind of work is hardly capable of discussing the details of such a paper.

DR. R. B. H. GRADWOHL seconded Dr. Campbell's statement that the paper had been enjoyed by the Society, and felt that it was an important contribution on this subject, and confirms Ehrlich in the theoretical explanation of animal immunity. Of special interest were the different cultures of the typhoid bacillus, and the behavior of animals treated with one culture toward another.

DR. H. EHRENFEST asked how, by the Ehrlich side-chain theory, the acquired immunity was explained. This point had not been explained in the paper, and the speaker would feel personally obliged for more light on it. He also wanted to know whether cultures of typhoid bacillus if taken out of Cultures Nos 1 or 2 would immunize different animals—whether that serum would show the same qualities—chemical and physiological.

DR. FISCH, in closing the discussion, said he felt that he had imposed upon the members of the Society by reading a paper on such a subject, as it could not be expected they should be able to thoroughly discuss it.

In regard to Dr Ehrenfest's question about the existence of an acquired immunity there had been as yet no other theory advanced which will satisfactorily explain it. Ehrlich's side chain theory is to the effect that the activity of extraneous substances is only possible by the presence of these side-chains, that is, by the existence of groups chemically constructed so as to combine with those substances introduced into the animal organism. If they are introduced, these substances affect their activity, because they follow the same chem cal lines and combine with those groups. It follows that where

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groups are present such a substance as a toxin must exert some action. But it is not necessary that these groups should always be present. There may be certain species which grow up, and that is really the case, and their existence has been proved by Ehrlich. The speaker had himself made experiments in this direction. He had taken a rabbit and immunized it with the blood of another rabbit when he got a serum which, if mixed with the blood corpuscles of the rabbit which furnished the blood for the injection, it destroyed these corpuscles, that is, the blood of one rabbit destroys the corpuscles of another rabbit. But if carefully immunized, he could take the blood of one rabbit and, after defibrination, inject this blood into the same rabbit afterwards, using the same serum in the same rabbit, and there will be no reaction. That means that this rabbit does not contain anything susceptible to its own toxin. This proves that such a condition of the lack of certain receptors is a fact.

In regard to the question of the behavior of certain sera in different animals, Dr. Ehrenfest had inadvertently touched upon a very interesting and important subject. There is a difference in the strength of the sera, and we can get, by continued injections and increasing doses, any strength of agglutinin we want He was a little surprised in his experiment, in the case of two animals – a goat and a rabbit— to get the same typhoid bacillus effect. It is especially emphasized by Ehrlich that we have no right to assume that the means are the same, and, practically speaking, perhaps in our time we may produce an antitoxin which will contain all the positively obtainable immune bodies which can be made acceptable —typhoid or whatever it is.

DR. F. REDER presented several anatomical specimens. The first specimen was from a case of

Appendicitis.

The speaker said he could always feel deeply for anyone suffering with appendicitis, as he had himself some years ago, when the disease was far less understood than it is to-day, and the operative technique not advanced to the perfection of the present time, submitted to a median laparotomy.

The case from which the specimen exhibited had been taken was interesting, as perforation had taken place within 48 hours after the attack. The patient was a young man, aged 26 years, who had always enjoyed good health. The attack began three weeks ago, when the

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patient was apparently in perfect health. He awoke one morning about 2 o'clock with a severe pain. During the day the pain ceased, but that night returned, and the next forenoon it was so severe that he begged his brother to kill him in order to relieve him of his pain. He was brought to the city and sent to the hospital, where the speaker saw him that evening. His temperature was 102°F., pulse 140. There had been no vomiting or nausea—nothing in the history but the pain. This pain was diffused over the entire abdomen. On palpation the seat of the most intense pain was found to be in the right iliac region. The abdomen presented the characteristic signs, but the diagnosis of appendicitis was based principally upon facial expression. This was very characteristic. He had aged perceptibly, the features being drawn, of the color of ashes, and the eyes sunken. The exhausted condition of the patient precluded operation that night, so ice bags were placed and a saline enema given. The next morning the facial expression was worse, and operation was performed at 9 o'clock. He found a perforation and three ounces of pus in the cavity. The intestines and omentum were much congested. The temperature dropped to normal and remained so. The cavity was flushed with saline solution, and a rubber drain as thick as the thumb introduced. This was changed on the fourth day, and a simple gauze drain substituted. The cavity was not again disturbed by solutions, and the gauze drain was removed on the twelfth day, with the wound almost granulated. This appendix contains a perforation, and the speaker thought that was due rather to pressure than to inflammatory condition. The appendix was large and much congested.

Three Uteri.

This is an interesting specimen, removed five weeks ago. The woman was 56 years old. On palpation the uterus was found enlarged, reaching to the umbilicus. When the finger was introduced into the vagina the cervix was found widely open, and passing the finger about it, there was found a growth. This growth was firm. At the time he advised a curettement, which was refused. The patient would not permit anything to be done, so he advised morphine to allay the pain. Some four or five months later he was again asked to see the woman. The condition had changed. She had been having hemorrhages, and was more or less emaciated On examination the vaginal canal was found to be full of a mass. On severe pressure the mass would pro-

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trude. The pains were those of a woman in parturition when the uterus was trying to expel the growth. The exposed part of the growth was necrotic, and the odor was very strong. I asked that I be permitted to remove this growth in the vagina, and promised that the pains would cease. She consented to this. In removing this growth he did not use any instruments, using his finger. It was readily broken up. The upper segment of the cervix appeared as if it had been afflicted with cancer—appeared ragged. In this, however, he was deceived. He cleaned out the canal, and in two weeks again saw the patient and found the cervix normal. Having in mind the nature of the growth, he asked that the organ be removed. To this she consented, and two weeks later the uterus was taken out. He was then glad that he had not curetted, which he had been considering previously, because the character of the tumor was such that a curette would not have accomplished much. Dr. Gradwohl had examined the growth, and the speaker was much relieved when it was pronounced a simple fibroma.

The next specimen was from a woman, aged 46 years. He was asked in this case to perform trachelorrhaphy. She was bleeding, though there was no odor. On examination he found cauliflower excrescences, which looked like carcinoma, and he asked to be allowed to remove the organ. This was done eight months ago, and the woman is to-day in perfect health.

The other specimen was removed from a woman, aged 50 years. He thought at one time that he could not afford to remove it, but he could see no way out of it. It was a case of dysmenorrhea, exceedingly painful. The speaker had seen her in one attack, and the attending physician had to administer chloroform in order to give her relief. She had taken to the use of morphine. The only relief seemed to be in removal of the organ. This was done by the abdominal route. The introitus was very narrow, and had he attempted to extirpate through the vagina he would have encountered much difficulty.

DR. GEO. GELLHORN was especially interested in the second uterus shown—the one with the intrauterine growth which protruded into the vagina. The uterus still shows signs of muscular hypertrophy produced by the primary dilatation of the uterus and the efforts of the uterus to expel the growth. A tumor of that kind will act like a foreign body in the uterus, and the organ will try to get rid of it.

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Therefore, the tumor appeared in the vagina, and if medical assistance had not been obtained, it is probable it would ultimately have protruded from the vulva. In some cases even an inverted uterus might follow, as in several instances, reported about five years ago. A tumor of this kind was born into a vagina, turned down with forceps, and the pedicle cut off with the Pacquelin cautery. In this procedure the inverted uterine wall had been torn through and total extirpation was immediately made, because it was impossible to repair the hole in the uterine wall.

Formerly these tumors were dissected off as nearly as possible to the base, and the rest of the tissues left.

It seems peculiar that the pedicle in the tumor shown this evening, which is considered a fibroma, should be so very soft, even after a hardening process of five weeks.

In the second case, the carcinoma of the vaginal wall, the operation shows a splendid result, and he thought Dr. Reder should be congratulated by the absence of recurrence for over eight months, especially as the carcinomatous growth appears to extend to the line of excision. In 77 per cent of cases of carcinoma of the neck of the womb, recurrence takes place within six months after the operation. This is mostly due to a contamination, he believed, of the incision with particles of the cancerous growths, or with instruments or fingers touching the eroded cervix.

Of the third case little can be said, as the condition of the patient seemed to demand such heroic measures. He supposed all other methods for relieving the patient had been futile.

The Health of the Army in the Philippines.—Lieutenant-Colonel B. F. Pope, Chief Surgeon of the Division of the Philippines, in his report in regard to the health of the troops, states that there has been a decrease in the percentage of sickness. Although there has been a reappearance of the plague, none of the soldiers have been attacked. Typhoid fever and malaria are on the decrease, but gastric and intestinal diseases are on the increase. The percentage of sickness to the command was about 6 per cent,

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REPORTS ON PROGRESS.

MEDICINE.

In Charge of W. M. HOGE, M.D.

The Pathological and Therapeutic Aspects of the Effects of the Roentgen Rays.

Carl Beck (*Medical Record*, January 18, 1902) describes three degrees of burns resulting from the x-ray. The first is characterized by hyperemia and infiltration of the skin, followed by exfoliation. It seems that there is an atrophy of the cutaneous glands, hairs and nails.

The main feature of burns in the second degree is the formation of blisters; after their removal the corium is exposed as a red and sore surface.

The third and gravest degree is characterized by the escharotic destruction of the irradiated tissues; they show the signs of dry gangrene. After the dead tissue is removed a granulating ulcer remains, the cicatrization of which may take months.

The most characteristic difference between ordinary burns and those by the x ray is the fact that the latter do not manifest themselves until after a period of incubation, which is of about ten days duration in burns of the first degree, two weeks in those of the second, and a few days more in those of the third.

Burns are more readily produced in a patient with a delicate skin, or whose general health is below par. The treatment of x-ray burns is virtually the same as for those produced by heat. Therapeutically, treatment by the x-ray is effective in skin diseases of known parasitic origin, as also in eczema, psoriasis, rosacea, acne vulgaris and prurigo. Results are also encouraging in cancer and sarcoma.

As regards the technique, careful individualization is necessary. "Trying is better than studying" At first, exposure should be of short duration and at long intervals, until the liability of the patient is determined. Treatment should be stopped as soon as the patient

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feels a burning sensation in the irradited area, and not resumed until this symptom has entirely disappeared.

For the first time exposure should be made for five minutes only and a week should elapse before a second is made If no unfavorable symptoms appear after the third exposure, the intervals may be gradually shortened, and the duration of treatment lengthened up to ten, 20 or even 45 minutes, every other day, or even daily, in refractory cases, as malignant disease. In the treatment of most skin diseases an exposure of five to ten minutes every third day is sufficient.

The tube is placed on an average about four inches from the area treated. As a rule, tube of low vacuum (soft tubes) are used. Experiments indicate that the superficial tissues are more acted on by soft tubes, and deep tissues by hard tubes.

Uric Acid Fallacies.

Frank Billings (*American Medicine*, October 12, 1901) enumerates the following "fallacies of uric acid:"

1. That uric acid is toxic.
2. That it is a causative factor in any disease except gout.
3. That "uric acidemia," meaning acid blood, exits.
4. That the chemical reaction of the blood may be altered by medicinal quantities of alkalies, or by diet.
5. That uratic deposits may be dissolved out by the administration of alkalies.
6. That lithia is a uric acid solvent of unusual potency.
7. That uric acid is an abnormal constituent of the urine.
8. That an excess of uric acid in the urine at one time or a deficiency at another time indicates an abnormal condition in reference to uric acid.
9. That rheumatism is due to uric acid.

The Germicidal Power of the Blood.

M. Shellenberg (*Medical Times*, January, 1902) says many investigators conclude that the germicidal constituent of the bood serum is an alkaline compound of serum-albumin. They also find that heating the serum-albumin alkaline solution to 65°C., or higher, destroys its germicidal action; and they explain this effect of heat on blood-serum and on their artificial solution by supposing that the high temperature breaks up the combination of the alkali with the serum-albumin. Fur-

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thermore, they found that a serum that had been thus rendered inactive could be regenerated, in part at least, by the addition of a small quantity of alkali.

Freshly drawn blood rapidly decreases in alkalinity on standing *in vitro*, which naturally suggests itself as an explanation of the fact that blood-serum rapidly loses its germicidal properties after being drawn.

PATHOLOGY AND BACTERIOLOGY.

In Charge of CARL FISCH, M.D.

A New Method of Staining the Central Nervous System.

T. Kodis (*Archiv f. Mikrokopische Anatomie*, Band 59, Heft 2, 1901). This paper means an immense advance in our methods of studying the finer histology of the nervous system, in as much as the author has succeeded for the first time to obtain a positive stain of the gray substance. So far only the Golgi methods were at our disposition for this purpose, and unfortunately their selective effect excluded, *a priori*, their utilization for pathologic purposes. By his method, Kodis has been able to stain in one and the same section structures, that hitherto only could be demonstrated separately in several differently prepared sections. The writer is for a long time acquainted with the method, through the author himself, and can not praise it too highly. One of the results already obtained by it is the demonstration, that certain excrescences of the finer branches of the dendrites, so far held to be artefacts in Golgi specimens, are distinct structures of very complex texture, and most likely of great importance. Kodis calls them "phyllodes." Kodis' formula is as follows:

1. Fresh pieces of tissues (till 24 hours after death) of one-half to two centimeters in thickness, fixed in saturated aqueous solution of mercury cyanide for one to two days.

2. Without washing, transfer to 10 per cent formol (one to two days).

3. Cut with freezing microtome.

4. Stain one to two minutes in the following solution: Hematoxylin, 1; anhydrous molybdic acid, 1.5; aq. dist., 100; H_2O_2, 0.5.

5. Wash in water one to two minutes.

6. Counterstain with alcoholic light green.

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7. Alcohol absol., xylol, balsam.

Material fixed and preserved after Kodis' method may be used also for an isolated myelin-sheath stain; the frozen sections are stained after Heidenhain's iron-hematoxylin method.

Experimental Yellow Fever at the Inoculation Station of the Sanitary Department of Havana, with a View to Produce Immunization.

John Guiteras (*American Medicine*, November 33, 1901). The paper gives the results of the inoculation treatment for yellow fever, carried out since February, 1901, at the station opened at that date in Havana. As is known, this method intends to protect non immune inhabitants of yellow fever foci, by giving them, by mosquito bites, an artificial attack of fever. The immunity thus acquired protects them against infection later on. In 13 experiments made by the United States Army Commistion, the disease thus produced was of a mild character, and all of the inoculated individuals recovered fully. *A priori*, of course, it is not clear why it should be, thus produced, always mild; if the infection by mosquitoes is the only way to acquire the disease, it appears that there may be just as much danger in the bite of a mosquito hatched in the laboratory, and per force fed on a yellow fever patient during one of the first four days of the disease, as in that of an insect roaming free and sucking and biting at its pleasure. It is not to be assumed that the severer cases are more serious, because the patient was bitten by more than one mosquito. If this is so, the inoculation treatment can not be considered as a vaccination, and the thought of enforcing it on whole bodies of men or on the population of whole districts, is preposterous. For a wholesale protection, other means have already proved perfectly sufficient. There is another drawback to this treatment, the fact that the method is as yet far from perfect. Thus Guiteras succeeded only in 8 out of 42 inoculations to produce yellow fever. The failures are explained by more or less probable possibilities. Of the eight inoculated persons 5 recovered, and 3 died, one of the latter, of the severe hemorrhagic form, thus giving a mortality of 12.5 per cent in contradistinction to a 30 per cent mortality of yellow fever at large. Are the conclusions drawn from 8 cases, or 24 cases, if we add those of the United States Commission, reliable enough to recommend the method as a routine practice?

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The Consumption of Milk and the Tuberculosis Mortality.

E. Biedert (*Berliner Klinische Wochenshrift*, Heft 47, 1901), since 1883, maintained that the danger of infection through milk could by no means be great, as is evident from the statistics of a great number of autopsies. The author has lately attacked the question, whether infection through the intestinal canal is a frequent occurrence in an original way. He compared the mortality from tuberculosis in the different provinces of Bavaria with the number of cattle kept and with the amount of milk consumption in these provinces. Although we can not enter into details, we can conclude from his curves and statistics that an influence of the degree of milk consumption among the populace on the frequency of tuberculosis and on the mortality from it, can not be established It seems rather that a plentiful consumption of raw milk must be considered of beneficial consequences.

Experiments on Extirpation of the Kidney.

Ch. Fiori (*Il Policlinico*, July and August, 1901) The first result of the extirpation of one kidney is interstitial proliferation of the remaining organ; later, changes of the parenchyma occur, which usually are complete by the 26th day after the operation. On these parenchymatous changes is based the functional hypertrophy of the organ and they consist in proliferation of the epithelial elements, leading to the formation of epithelial bands in the peritubular tissue. This means a return to the embryonic condition of the kidney. A new formation of tubuli does not take place. The same, in the epithelial proliferation after resections no such new formation is observed. Nevertheless, the functional compensation brought about by these proliferations must be very great, since in animals besides one kidney, two-thirds of the other can be removed without endangering life.

The Infantile Anemia Splenica.

G. Jemma (*La Clinica Medica Italiana*, No. 4, 1901). There is a great disagreement among the authors about Van Jaksch's pseudoleucemia infantum. While most of the Italian investigators assume that with it is designated a specific infections disease, Luget believes that it is closely related to leucemia. Others look upon it (Senator, Monti, etc.) as secondary to rachitis, lues, and malaria; while Marfan, for instance, attributes it to intestinal intoxication. Jemma gives a new contribution to its pathogenesis. He proves that necessarily

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toxic and infectious substances must be present to stimulate the spleen and bone-marrow to increase activity. Each case can be traced back to an infection, and very frequently the latter is of gastro-intestinal origin.

The Theory of Antibodies. (M. Gruber, *Muenchener Medizinische Wochenschrift*, Nos. 46–49, 1901.)

The Protective Substances of the Blood. (P. Ehrlich, *Deutsche Medizinische Wochenschrift*, Nos. 50 and 52, 1901.)

The Side-Chain Theory and Its Opponents. (P. Ehrlich, *Muenchener Medizinische Wochenschrift*, No. 52, 1901.)

A review of the above quoted three papers is absolutely impossible, without exceeding many pages of the space allotted to reviews in this journal. Besides, even a detailed review never could impart to the reader a full comprehension of the importance of the subject dealt with in these papers. Nevertheless, they must be emphatically mentioned, because they represent documents that will never disappear from the history of biologic science.

Gruber's publication, the anti-Ehrlich tendency of which was the reason why the author refrained from reading it before the last meeting of the German Naturalists, is an attempt to criticize and ridicule Ehrlich's side-chain theory; Ehrlich's first paper gives a plain and comprehensive statement of the results so far obtained in investigations, to explain the phenomena of immunity and to reconcile them with general biologic principles, while his second communication, in a fragmentary shape, directly answers the attacks of Gruber.

What Ehrlich's side chain theory will be to biology in the future, we are not yet able to foretell; that it has already succeeded to shed new light on many so far misunderstood phases of life nobody denies, and that especially the problem of immunity has been altogether revolutionized by it, is an ascertained fact. While to a vasual reader the whole fabric of this theory is apt to appear mystic and phantastic, the initiated know, that it is based on work that in its painstaking detail and thoroughness almost never has seen its like. In fact, it is a grave misapprehension of Gruber's that Ehrlich had jumped to his conclusions. Never was a theory better prepared and better founded. It is now about six years since it was first promulgated; the number of researches made in its wake is legion; and the result of all this work

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has uniformly been that it easily could be reconciled with the theory. Especially the French school made innumerable efforts to disprove some of Ehrlich's assertions, and even the latest and seemingly most serious objections published by Bordet, are already shown to be untenable and explained by inexact experimentation There is not a single fact that if put to the crucial test, will not find its proper place with the side chain theory, the old theory that protoplasmic groups form specific compounds with suitable substances, for which in consequence of their stereochemic structure they have a specific chemical affinity.

From the enormous amount of work done to establish and build up this theory, work that has taken years of assiduous application, one should expect that objections to the conclusions drawn from it, could only be based on a demonstration of exact observations. Gruber does not bring them, nor does he claim that he has made them; the few that he mentions, are either not to the point or they are inaccurate, as has already been shown by Sachs and others. He forgets everywhere that Ehrlich has not speculated, but that he worked before he speculated, and that his speculations nowhere exceed the boundaries kept by experiment and so-called "fact." It is, nevertheless, surprising that Gruber finally arrives at about the same conclusions in many points as Ehrlich, only in a much more circuitous and obscure way than the latter, so that, if it is question of simplicity, the explanations of Ehrlich are for this reason alone to be preferred. Above all, Gruber shows too much, that he simply theorizes and does not speak on the ground of his own work.

It is very much to be regretted that, by Gruber's publication, difficulties should arise for the generalization of work on the basis of Ehrlich's theory. Even, if we admit, that in the course of time, the latter will have to modify and adapt certain points to the results of future investigations, it must be remembered that heuristically it has already proved of such an immense importance that any tendency on the part of an opponent to ridicule it, must appear in the highest degree ungrateful and preposterous. And this is the odious side of Gruber's publication; his words do not breathe the spirit of science, but that of selfishness and self-idolatry. If it had been for Gruber, his discovery of bacterial agglutination would have remained, what it is now for the practicing physician, a diagnostic help.

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SURGERY.

In Charge of

A. V. L. BROKAW, M.D., and E. C. GRIM, M.D.

Prelimary Note on the Sterilization of Catheters — A Bacteriological Study.

Nancrede and Hutchings (*Medical News*, November, 23, 1901). This communication presents much of interest to the surgeon and the general practitioner as well, by drawing attention in a clear, concise manner to a most important subject, and leads us to scrutinize more carefully our methods as to the use and care of the catheter. The majority of us have food for reflection, when we consider some of the points brought out in this paper. Those engaged in hospital work will be particularly impressed with this paper. The proper sterilization of catheters is often difficult, and at times very uncertain, as we all know. Unfortunately, too often the same catheter is employed for a number of patients.

The most superficial study of cystitis will show how important the question of efficient sterilization of catheters has become, for such a study will show that a large majority of inflammations of the bladder results from infection conveyed by a surgically unclean catheter, sound or bougie, hence are preventable. Although these instruments may, indeed, be contaminated by non-sterilized hands, the infected external genitalia of the female, or the urethra, especially from the latter in the male, yet all such sources of infection may be easily eliminated, while the sterilization of instruments is certainly often not attained. The desiderata in the way of sterilization of catheters are certainty, rapidity and availibility; for, in private practice, facilities readily obtainable in a hospital, are rarely available.

The certainty with which metal and glass catheters can be sterilized by prolonged boiling is known, but it is not believed by most that any soft rubber (Nelaton) catheter and most English (elastic) catheters can also be repeatedly boiled, for five or more minutes, without impairing their polish, strength or durability.

These conclusions can not fail to appear to the thoughtful:

1. An infected soft rubber catheter can not be completely sterilized by boiling under four and one-half minutes.

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2. Mechanical cleansing from all dried pus, coagulated blood, or mucus will render sterilization easier, and will demand a shorter time to be effective.

3. Elastic (English web) catheters and soft rubber catheters can be repeatedly boiled, for five or more minutes, without roughening their surfaces or diminishing their elasticity and strength.

4. Chemical sterilization, by immersion in a 1 to 2,000 mercuric solution for five minutes, does not sterilize any variety of catheter which has become infected, at best only inhibiting the growth of the germs, for if the mercuric salt be precipitated by ammonium sulphide, the germs will grow freely when implanted in culture media, as shown in experiments 60 to 63.

5. The results of experiments, as stated in the previous conclusion, indicate that chemical sterilization should never be employed for catheters which are to be retained in the bladder for any length of time, unless subjected to a very prolonged action of the mercurial salt, lest the merely inhibited germs develop.

6. Should corrosive sublimate be employed for the sterilization of catheters, it must be in a concentrated solution, and the catheter must remain in it for a much longer time than the usual period considered amply sufficient in the laboratory; no mere washing with any chemical solution being efficient for an infected instrument.

7. Formalin vapor will sterilize infected instruments in 24 hours (see Experiment 64); how much shorter time will be sufficient we have not as yet determined, but propose to do so in the future.

8. All methods of sterilization commonly employed. should be continued for much longer periods than the minimum time required for destruction of germs in the laboratory.

9. English web catheters can apparently be more readily sterilized by heat than can soft rubber catheters, probably on account of interior construction.

The Technique of Major and Minor Amputations.

Cowan (*Philadelphia Medical Journal*, September, 1901) divides amputation into two classes: (1) Amputations on account of injury; (2) amputations necessitated by some pathological condition. In the first class the question should always be, can amptuation be avoided? Under no circumstance should a limb be sacrificed until we have thoroughly convinced ourselves that an attempt to save it would be

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futile. Three questions always come up in severy injury requiring amputation, the treatment of shock, when to amputate, and where to amputate.

For shock, strychnia is the most valuable; whisky is harmful. Intravenous or intracellular injection of hot saline solution is most effective. Keep the patient warm.

The author is opposed to immediate operation. Give the body and tissue a little time; stop the hemorrhage, put on a temporary dressing after cleansing the wound and wait.

Every inch of the limb should be saved that is possible. There are certain exceptions to this rule; even small remnants of the hand or fingers should be saved.

The amputation on account of some pathological condition are traumatic gangrene, osteosarcoma, and chronic osteomyelitis.

OPHTHALMOLOGY.

In Charge of W. A. SHOEMAKER, M.D.

The Ophthalmoscopic Examination for Kidney Disease.

Edward Jackson (*New York Medical Journal*, July 27, 1901) urges the importance of making an opthalmoscopic examination in all cases of nephritis, stating that pathological conditions are found in 50 per cent of the cases and distinct albuminuric retinitis in at least 10 per cent.

Tobacco Amblyopia.

C. E Finley (*Archives of Ophthalmology*,) during a residence of eight years in Havana, treated ninety-two cases of tobacco and alcohol amblyopia. Some improved under treatment and others did not. One acute case resulted in total blindness.

He can not endorse the opinion of many that tobacco grown in Cuba is comparatively harmless, and that Cubans do not suffer from this form of amblyopia.

Retinal Detachment During Labor.

R. G. Haun and R. L. Knaggs (*Lancet*) reports a case, which is one of the causes of blindness during parturition. Retinal detachment during labor generally ends in recovery, while such an accident occurring during an attack of renal disease is usually a prelude to a fatal result.

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BOOK REVIEWS.

Gall-Stone Diseases: Introduction to the Differential Diagnosis of the Separate Forms, based upon his own experience gained in 433 laparotomies for gall-stones. By Prof. Hans Kehr, Halberstadt. Authorized translation, by William W. Seymour, A.B., M.D., formerly professor of gynecology in the University of Vermont, etc., with an introduction by Prof. Kehr. P. Blakiston's Son & Co., Philadelphia. 1901. Price, $2.50.

The author states that gall-stone surgery has not received the attention that it deserves and, hence, he believed that this exhaustive work might at least make better diagnosticians in regard to this disorder and lead to a more rational surgical treatment. It certainly treats this disorder from a surgical standpoint in a manner that will place it among the classics.

Operative Surgery. By Joseph D. Bryant, M.D., professor of the principles and practice of surgery, operative and clinical surgery, University and Bellevue Hospital Medical College, etc. Vol. II. Operations on the mouth, nose and esophagus, the viscera connected with the peritoneum, the thorax and the neck, scrotum and penis, and miscellaneous operations. 827 illustrations, 40 of which are colored. D. Apleton & Co., New York.. 1901.

This authorative work needs no eulogy. The surgeon will find it a complete guide to all operative procedures, and it should be found in the library of every practitioner who practices surgery.

Human Placentation. An account of the changes in the uterine mucosa and in the attached fetal structures during pregnancy. By J. Clarence Webster, B A., M.D. (Edin.), F.R.C.P.E., F.R.S.E., professor of obstetrics and gynecology, Rush Medical College, etc. 233 illustrations. W. T. Keener & Co., Chicago. 1901. Price, $3.75, net.

This work is a comprehensive study of the human placenta, and contains a full account of the changes in the uterine mucosa and in the attached fetal structures during pregnancy. The book is illustrated with more than two hundred figures, most of which are original. It is

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probably the most careful and exhaustive work ever done on this subject, and will be of special interest not only to the obstetrician but to the scientist in general.

The Practice of Obstetrics. By American authors; edited by Charles Jewett, M.D., professor of obstetrics and gynecology in the Long Island College Hospital, Brooklyn, N Y. New (2d) edition, revised and enlarged. In one handsome octavo volume of 775 pages, with 445 engravings in colors and black, and 35 full-page colored plates. Price, cloth, net, $5.00; leather, $6.00; half morocco, $6.50. Lea Brothers & Co., Philadelphia and New York.

Works on obstetrics are not as numerous as on other medical subjects, and there is room for such a text-book. We have nothing but the highest praise for this work. The subject is treated in the light of modern pathology. Special mention should be given to the chapter on puerperal infection, and in this the reader will find a marked difference when compared with the text in older works.

The chapters on anatomy and development are illustrated by many beautiful figures, in fact, the whole series of illustrations are exceptionally striking.

Professor Jewett has been assisted by eighteen other leading men in the preparation of this work, the principal colleges being represented among the collaborators.

The rapid exhaustion of the first edition proves that the profession is not slow to recognize and appreciate an up-to-date work on this subject.

A Text-Book on Gynecology. Edited by Charles A. L. Reed, A.M., M.D., President of the American Medical Association (1900–01); gynecologist and clinical lecturer on surgical diseases of women at the Cincinnati Hospital, etc. Illustrated by R. J. Hopkins. D. Appleton & Co., New York. Price, $5.00.

This text-book is intended to serve as a working manual for practitioners and students and, without question, embraces the best approved developments of gynecology. Various topics were assigned to different writers and the whole blended into one work by the editor.

The diseases are treated in the nomenclature of modern pathology and bacteriology. Particular attention is given to the many different infections to which the generative organs are subject. Sepsis and

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antisepsis, therefore, occupy considerable space. The chapter on diagnosis is very complete, and discusses all the practical procedures in examining patients.

In the matter of treatment the book is very conservative. Operative technique is given in clear, concise language, and is elucidated by numerous beautiful illustrations.

Simon's Clinical Diagnosis. A manual of clinical diagnosis by means of microscopical and chemical methods for students, hospital physicians and practitioners. By Charles E. Simon, M.D., author of Simon's Physiological Chemistry, etc. New (4th) edition, thoroughly revised and enlarged. In one handsome octavo volume of 608 pages, illustrated with 139 engraving and 19 plates in colors. Price, cloth, $3.75 net. Lea Brothers & Co., Philadelphia and New York. 1902.

In the last five years spanned by four editions of this book, the practical importance of laboratory methods in clinical diagnosis has become generally recognized, and the practitioner who can not or who has not the facilities to make use of these means must be considered unfortunate. A work on clinical diagnosis giving the advanced knowledge on laboratory methods of diagnosis should be in the library of every practicing physician.

This work fully meets the requirements of the practitioner in being modern and practical. The present edition has been thoroughly revised. Abundant references to the literature of the subject are given, thus making the book of great value to the student and investigator. We know of no work that gives more practical ideas concerning the chemical and microscopical examination of the blood, sputum, gastric juice, feces and fluids of the body.

Transactions of the Medical Society of New Jersey, 1901.

In addition to reports of business proceeding, this volume contains a number of valuable papers on various subjects of interest together with discussions of same.

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ST. LOUIS

COURIER OF MEDICINE.

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ORIGINAL CONTRIBUTIONS.

Concerning the Antistreptococcus Serum.

BY ROBERT LUEDEKING, M.D.,

ST. LOUIS, MO.

TAKEN all in all, the reports on the efficacy of antistreptococcus serum in the treatment of septic processes are not favorable. The reports of good results are outnumbered by those of failure; and the successful outcomes are met by a critical skepsis as to their value as a proof and demonstration of a specific, curative influence of the serum. The objection to the conclusion "*post hoc ergo propter hoc*" is far stronger, when the beneficial effects of the antistreptococcus serum are asserted, than as to any other remedial measure. But, nevertheless, it must be admitted, that this serum has been developed upon and rests upon the same established scientific basis, that underlies the specific treament of diphtheria.

The causes of the many failures and disappointments of the antistreptococcus serum are apparent and easy of conception.

In first order we must bear in mind, that the streptococcus pyogenes (and this is the micro-organism alone to be considered), exhibits a marvelous polymorphism. The modern students of this subject have attempted to separate and indi-

Read before the Medical Society of City Hospital Alumni, January 16, 1902.

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vidualize these many forms into groups or families of more or less concise character. All attempts at such systematic subdivision have been futile, because the differences between the various subclasses have been found variable and of no stability. Each any every scheme at classification has proved to be inadequate, because constantly new races are met with, that show the various characteristic features in different combinations.

When Marmorek made the first extensive experimentation with the serum in 1895, he held the view that the several streptococcus forms were identical. He held that the differences in the streptococci were due to changes and alterations in the qualities and the nature of the environment, the nutritive soil, etc. He succeeded in producing cultures of a highly virulent character, and with these cultures he immunized asses and horses. The serum of these animals subsequently exhibited protective and curative qualities.

Marmorek cites as a proof of the enormous virulence of his cultures and of the protective power of his serum the following observations: Rabbits die in an incredibly short time after inoculation of one ten-millionth of a c.c. of the pure culture, but the previous injection of 0.2 c.c. of his serum protected the animals completely against ten times the deadly dose of these cultures. He was able to save animals from invariably deadly dosage of the poisonous cultures, by introducing the serum five hours later; and, after the employment of weakened cultures or ordinary cultures, the serum was curative even after later administration.

In the application of this serum in man Marmorek called attention to the circumstance, that efficacious results could only be expected in infections due to the streptococcus pyogenes. In puerperal infection due, for instance, to the bacterium coli, the serum could not be of any effect or value.

The work of Marmorek was soon gone over by Koch and Petruschky. They found, that the streptococcus of Marmorek's cultures, that was so deadly to rabbits, was far less virulent when introduced into other animals or man. The knowledge came to us, that the several species have a widely varying susceptibility for one and the same micro-organism. Deadly virulence in one species is offset by the absolute indifference exhibited by another species. For instance, it was learned that cultures made from fatal cases of steptococcus-

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peritonitis, or septicemia in man, may prove positively inert when introduced into rabbits.

Therefore, we must conclude, that one reason for the failures of the antistreptococcus serum is to be sought in the polymorphism and the variability of the streptococcus pyogenes. To-day we have departed from Marmorek's mothods in so far, that the curative sera are produced in animals by streptococci, that have been grown from septic processes in man; thus, from fatal cases of puerperal sepsis, peritonitis, phlegmons, erysipelas, etc.

A second cause of failure of any given serum resides in the fact that few septic processes in man are pure, unadulterated streptococcus infections. Consequently, we must bear in mind, that other specific toxic influences may occasion failure and death, even if the sepsis has been annulled by the serum. It is certainly but a fair proposition to ask for the same clear uncomplicated conditions, in fixing the value of the antistreptococcus serum, that we demand in the adjudgment of the value of diphtheria antitoxin. Of this latter serum we expect nothing in cases where profound septic complications have taken possession of the field.

A third cause of failure of the serum is to be pointed out in the usually tardy and late employment of the remedy. We generally think of the antistreptococcus serum as a last resort, when, fairly considered, it should be an early refuge. Our usual procedure is to inject the antistreptococcus serum at a time when the infection is a most thorough and accomplished one; at a time, when irreparable degenerative processes have occurred in the heart-muscle, the kidney, and the nervous apparatus. This postponement and procrastination is, without doubt, a most damaging mistake. In the report of the American Gynecological Society on this subject, the admission is made that serum was used generally as a *dernier resort.* We should be able to deal with our streptococcus infections, as we know we must deal with our Klebs-Loeffler infections. The early interference, that is imperative in diphtheria, based upon early recognition, can, however, not usually be practiced in septic infection. It is to be regretted, that the early recognition of a sepsis is difficult; yea, in many instances, impossible. Perfected methods may come to our aid and eliminate to a satisfactory degree the uncertainties, that now baffle timely intervention.

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A fourth cause of failure is one that is in our control, and can be avoided by due provision. It lies in the inertness of many of the sera, that are in the market. We know, that after a short lapse of time the antibodies in such sera are lost. Good results can only be expected from fresh serum, properly prepared. There must be at hand an ever-ready source for serum of quite recent date. Such fresh serum can be obtained now in this city. I learn that the streptococcus cultures that are employed in the serum production are made up of seventeen different individual forms; these cocci have been taken from fatal cases in man, or from such that exhibited severe sepsis. In nearly every case their great virulence was further proved by animal experiment. I believe, though I am not positively informed, that this method of collective culture is practiced at Johns Hopkins Hospital; and I learn that a congenial, harmonious existence of these several individuals is preserved. There is a perfectly undisturbed symbiosis.

By these means it is expected that the feature of polymorphism is taken care of, and that in this wise a protective serum of wide applicability is secured.

Permit me to present the outlines of several successful cases; the history of them is intended to bring out and emphasize the postulates that should be accorded the serum.

CASE I.—Child with otitis media suppurativa following scarlet fever. The infection had run a mild course; after the disappearance of the rash and the passing of the mild angina, convalescence was interrupted by renewed fever, coryza and earache. The tympanum was punctured; profuse suppuration ensued, with continued bad general condition. The streptococcus pyogenes was found, and 10 c.c. of recent serum given in divided doses. As a result the suppuration ceased, and rapid recovery ensued.

CASE II.—Sepsis after scarlet fever, in the practice of Dr. R., presenting glandular suppuration and bilateral otitis media. A large glandular abscess had been opened and drained. There continued profuse and foul suppuration of the right ear, with tenderness over the mastoid process and swelling, that showed pitting. A mastoid abscess seemed inevitable. Antistreptococcus serum was advised, and administered in repeated doses, with a happy result. A troublesome urticaria supervened.

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CASE III.—Scarlet fever in a young person; sudden, severe onset; rash appeared next day. A very severe angina developed; a deep pseudo-membrane covered the tonsils, the pillars and the soft palate; gangrenous odor; adenitis. There was a high fever, albuminuria, and acute pain in the left side from splenic swelling. These features were considered to be of septic nature. Culture showed streptococcus pyogenes. Therefore, on the third day antistreptococcus serum was given and repeated. A very decided influence was the consequence. The spleen became reduced in size, the lymph glands subsided, the exudate in the throat exfoliated.

CASE IV.—Child of Dr. C. The child was taken sick with catarrhal symptoms indicating a grip infection. There developed angina, without exudate; coryza, with purulent discharge; lymph-adenitis, etc. The bacteriologic examination showed the presence of the streptococcus pyogenes. The use of the serum was proposed and carried out. The following report came to me:

"Patient is very much better. The effect of the serum was very decided on Monday, Tuesday, Wednesday and Thursday. She had continued fever of 104°F., except when reduced by frequent baths. Even then, after the baths, it did not go below 103°F. At one time it was 105°F. Thursday evening the case looked very threatening, with the continuous high fever and no indication of improvement. At 9:30 p.m. the serum was given; at 1:30 a.m. the temperature had dropped to 102°F., following a bath, and remained so for six or eight hours. At 10:30 a.m., Friday, it had risen to 103°F. She was again bathed. That was the last bath she received for the reduction of temperature. You saw her at noon, and shortly after serum was again given. In the afternoon the temperature fell to 100°F. At 10:30 p.m. it rose to 102°F., but she was resting quietly. The next morning, Saturday, the temperature was 99.4°F. Since then it has not been higher. The general improvement corresponds to the reduction in temperature. She feels much better, wants to play, and the glandular swellings are much smaller."

This good state of affairs lasted for six days; then came renewed fever and local manifestations. The serum again controlled matters, but did not avert ultimate deep abscess formation at the throat.

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CASE V.—Erysipelas of the left leg and thigh, with phlegmonous abscesses, in a young man. High temperatures, stupor and delirium. Locally, ichthyol was employed; salophen and phenacetin in small doses internally. Repeated injections of serum, 5 c.c. at each dose, were practiced; the effect in each instance was evident in reduction of temperature and general improvement. The local manifestations were not much influenced however. Ten injections of 5 c.c. each were given. Thereupon the local conditions improved, but a few small abscesses were opened later.

From the cultural characteristics it became evident that the organism was streptococcus erysipelatis or pyogenes. Animal experiments showed a great virulence for rabbits and guinea-pigs.

CASE VI.—Puerperal infection; case of Dr. S.; primipara, aged 18 years. Forceps delivery, ruptured perineum, July 28th, 7:30 a.m.; perineum was repaired. Temperature normal for three days, to July 31st. On this date, chill at 10 a.m.; temperature 104°F. at 1 p.m. In the evening and next morning, August 1st, the uterus was irrigated. I saw the patient at noon; temperature 107°F., pulse 148; stupor. The objective examination revealed a clean perineum, little discharge, uterus of appropriate size. In the left parametrium there could be felt a distinct exudate, resistence and pain. Abdomen somewhat distended. The treatment outlined consisted in cold sponging, stimulation with whisky and strychnine, inunction of mercurial ointment and injection of 10 c.c. of antistreptococcic serum. A culture was made of the uterine secretion, and the streptococcus pyogenes found. The history of the case is apparent from the temperature chart appended.

What conclusions may we arrive at from such experiences? My conviction is, that the early administration of a recent serum, of such qualities as can be obtained here now, in fitting cases, *i.e.*, such of streptococcus infection, is going to prove life-saving. This conclusion is founded on biologic and pathologic principles and experiences. The ideal results, that we obtain with diphtheria antitoxin, will probably never be obtained in the septic infections, for the reasons stated previously.

But, in some of these infections we can act promptly. In scarlatina, with streptococcic pseudo-membranous angina, or other septic manifestations, we should give the serum without

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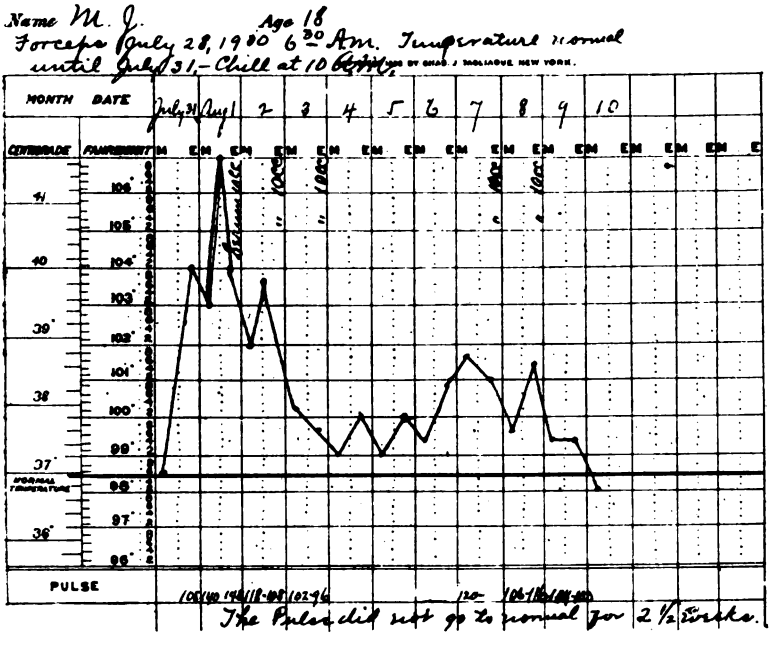
delay. The more recent results of Baginsky, in Berlin, and Bokai, in Vienna, are very satisfactory. Baginsky's original report was one of poor results, chiefly on account of a wretched, inert serum.

In cases of erysipelas also, good results should come from early intervention with a good preparation.

RECORDS OF TEMPERATURE.


Name M. J. Age 18
Forceps July 28, 1900 6.30 Am. Temperature normal
until July 31.- Chill at 10
MONTH DATE
July 31 Aug 1 2 3 4 5 6 7 8 9 10
CENTIGRADE FAHRENHEIT
PULSE
The Pulse did not go to normal for 2 1/2 weeks.

In the puerperal infections matters are not so simple. If the streptococcus pyogenes is the agent, the early treatment should bear good fruit. With reference to the puerperal infections, the literature shows, in the failures, a record of indiscriminate and unjustified use of the serum, or a late use in hopeless cases.

In middle-ear suppuration, with free drainage, it would seem to me, that much good can be accomplished and suppuration ended.

It stands to reason, that, if we have grounds to assume an abscess of the brain, an empyema of the chest or a purulent exudate in the peritoneal cavity, the serum has no application. Such action would be irrational. The proper surgical help should, at any rate, precede serum treatment.

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So far as my experience goes, the injection of the serum carries no considerable danger. I have met with urticaria and painful joints. The large bulk of the ingested *foreign* serum explains these occurrences. And, I do not doubt, that the temperament and psychical make-up of the patient play a rôle in these developments

The theoretical consideration, that the introduction of a large amount of the antibodies at one time might destroy too great a number of the bacteria suddenly, and that these corpses might become a danger through their inherent toxins, is hardly founded.

The serum does not seem to affect circulation and respiration. As in diphtheria, the pulse remains rapid for quite a time after a normal temperature is established.

We should watch the kidneys. The urine becomes scant. I have never observed albumin or blood to follow the divided dosage. Kemp reports that large single doses produce in healthy dogs albuminuria, hemoglobinuria and hematuria. The same amounts given in divided doses did not create trouble.

I feel encouraged as to the serum. We must be assured of a good preparation, must learn to restrict its use, and use it *early* in the appropriate cases. No doubt, a serum better than any we have now, will be found.

The Variation in the Production of Free Hydrochloric Acid in the Infant Stomach From Various Foods.

BY A. S. BLEYER, M.D.,

ST. LOUIS, MO.

THE observations of Wurtz, Kurlow, Wagner, and Strauss provide us with a well-supported theory—particularized in infant digestion—the activity and usefulness of free hydrochloric acid in the stomach depends principally on its power as a germicide. According to them, only the most resistant bacteria pass through the pylorous; such as the anthrax bacillus, various staphylococci and, possibly, the bacillus of

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Koch. A tuberculous intestine being regarded as a remote possibility where a normal gastric acidity has existed.

According to Czerny, HCl is practically always present in the stomach of an infant, even a considerable time after digestion, when the stomach is completely empty.

Kitasato[1] strongly supports these observations.

Pawlow, whose work has thrown infinite light into the field of digestion, asserts that the secretion, or rather the presence and quantity of HCl, and also of the other digestive fluids, is dependent in a great measure upon the character of the food exhibited. The stimulus exerted by foods upon the gastric cells varying widely.

There is here, then, a possible explanation for many intestinal disturbances in infants which might be traceable to a deficient or increased production of HCl, dependent upon the kind of food administered, which might further be influenced to a considerable extent by the individual adaptability of the infant to this or that food.

Certain it is, that one apparently healthy child thrives vastly better on one food than another child on the same food, and *vice versa*, so that we can take this second premise as an established fact.

But let us first lay aside every consideration but the evidence that goes to show some relation between certain foods and the appearance of HCl in the stomach; to its excessive formation, or its deficiency. And later, clinical cases will be cited illustrative of the conclusions drawn, at least from the side of hyperacidity, where the augmentation of the casein in the food has been followed by the most satisfying results.

I will recall once more the works of Kurlow, Strauss, Wurtz, etc., together with Mester,[2] who assert in convincing terms their belief in the existence of many intestinal infectious derangements that are dependent upon a deficiency of gastric acidity.

The question in a nutshell, then is, *are there some foods that are better hydrochloric acid-producers than others.*

Von Jaksch[3] and Wohlman[4] assert that free HCl often does not appear at all after the ingestion of tea or albumen water. From my data it will be seen that three foods at least are responsible for the early and abundant secretion, or formation, if you will, of HCl. So here, in itself, is a demonstration of the variations to be expected in the production of HCl from the administration of at least these foods.

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Case	Age Months	Test Food	Time Examined After Feeding Hours, Minutes	Reaction
1	30	p. c.	:30	Neg.
2	24	p. c.	:30	do
3	14	s. x.	:30	do
4	15	s. x.	:30	do
5	11	w. m.	:30	do
6	10	w. m.	:30	do
1	30	p. c.	:45	do
2	24	p. c.	:45	do
3	14	s. x.	:45	do
4	15	s. x.	:45	do
7	3	w. m.	:45	do
8	14	w. m.	:45	do
13	17	p. c.	1:00	do
2	24	p. c.	1:00	Pos.
3	14	s. x.	1:00	Neg.
4	15	s. x.	1:00	do
9	7	w. m.	1:00	do
10	12	w. m.	1.00	do
11	11	s. x	1:15	do
2	24	p. c.	1:15	Pos.[1]
3	14	s. x.	1:15	Neg.
1	30	p. c.	1:15	do
16	22	s. x.	1:30	do
12	20	p c.	1:30	do
13	17	s. x.	1:30	do
1	30	p c.	1:30	do
21	14	w. m.	1:30	do
14	15	p c.	1:45	Pos.
15	21	p. c.	1:45	do
4	15	s. x.	1:45	do
3	14	s. x.	1:45	do
17	2	w. m.	1:45	do
38	2½	w. m.	1:45	Pos.
16	22	s. x.	2:00	do[2]
13	17	s. x.	2:00	do
17	31	p. c.	2:00	do
18	24	p. c.	2:00	do
19	9	p. c.	2:15	do
20	30	p. c.	2 15	do
14	15	s. x.	2:15	do
1	30	s. x.	2:15	do
5	11	w. m.	2:30	do
25	8	w. m.	2:30	do
24	12	s. x.	2:30	do
36	12	s. x.	2:30	do
1	30	p. c.	2:45	do
2	24	p. c.	2:45	do
30	5	a. w.	1:00	Neg.
41	8	a. w.	1:00	do
40	7	a. w.	1:00	Pos.[3]
37	2	a. w.	1:00	Neg.
23	15	a. w.	2:15	do
24	12	a. w.	2:15	do
42	2	a w.	2:30	do
27	12	a. w.	2:30	do
26	7	a. w.	2:45	Pos.
32	4	a. w.	2:45	do[1]
34	10	a. w.	2:45	do
31	5	a. w.	2:45	do
31	5	T.	1:00	do[4]
32	4	T.	1:00	do[4]
15	21	T.	2:45	Neg.
4	15	T.	2:45	do
21	14	m. m.	:30	do

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Case	Age Months	Test Food	Time Examined After Feeding Hours, Minutes	Reaction	Case	Age Months	Test Food	Time Examined After Feeding Hours, Minutes	Reaction
22	20	m. m.	:30	Pos.	35	22	w.	:30	Pos.[2]
23	15	m. m.	:30	Neg.	1	30	w.	:45	do[2]
8	14	m. m.	:45	Pos.	40	7	w.	:45	do
6	10	m. m.	:45	do	36	11	w.	1:00	do
34	10	m. m.	:45	do[2]	10	12	w.	1:00	do
8	14	m. f.	:30	do	27	12	r. w.	:30	do[2]
24	12	m. f.	:30	do[2]	21	14	r. w.	:30	do[2]
25	8	m. f.	:30	Neg.	28	10	r. w.	:45	do[1]
26	7	m. f.	:30	Pos.	29	5	r. w.	:45	do[2]
5	11	w.	:15	Neg.	27	12	r. w.	1:00	do
33	9	w.	:15	do	24	12	r. w.	1:00	do
31	5	w.	:15	do	8	14	r. w.	1:00	do
3	24	w.	:30	do	7	3	r. w.	1:00	do

[1]Faint.

[2]Intense.

[3]Contamination suspected from milk.

[4]Large curds present, shows contamination with milk; test of no value.

COMPOSITION OF ABOVE FOODS.

	Proteids	Sugar	Fat	Salts	Total Solids
w. m. (weak modified cows' milk) - -	1.	6.	2.	.19	9.18
s. x. (strong modified cows' milk) - -	1.50	6.	3.	.26	10.76
p. c. (plain cows' milk) - - - - - -	4.	4.3	3.5	.7	12.5
a. w. (albumen water) - - - - - -	1.6	2.	?	.2	3.8
T. (watery solution, tea with sugar) - -		3.			?
m. m. (malted milk) - - - - - - -	2.28	10.18	.39	.5	13.35
m. f. (Mellin's food, without milk) - -	1.50	11.56	.04	.45	13.55
w. (whey) - - - - - - - - - - -	.86	4 79	.32	.65	6.62
r. w. (rice water) - - - - - - - -	.09	1 63 Starch	.05	.03	1.80

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I will not attempt to go into the extended discussion resumed recently in Germany by Koeppe on the question of the origin of HCl in the stomach. His belief that its origin is from the chlorine combinations in the food ingested and not from the stomach cells, will warrant, at least, an inference that the variation in the quantity of HCl produced, is somewhat proportionate to the food ingested, and I merely quote this, *en passant*, as further evidence in favor of the variation to be expected from different foods.

From ninety examinations of the stomach contents of infants, as shown by the accompanying tables, fed on nine different foods and examined at different periods of digestion, varying from fifteen minutes to 2 3-4 hours, I found that with cows' milk the average time of the appearance of free HCl was one hour and forty-five minutes. A single case showing a faint trace in one hour, in six examinations; a trace was also found in one case in four, after eighty minutes. With albumen water I found the free acid in two and three quarter hours, and in a single case, in four examinations, as early as one hour.

With tea, no HCl was found up to two and three-quarter hours.

Malted milk showed a trace, in one case, in thirty minutes, and a larger quantity, in several examinations, in forty-five minutes.

Whey showed a strong reaction with Toepfer's dimethyl-amidoazobenzol solution, in thirty minutes.

Mellin's food, prepared without the addition of milk, gave a precisely identical reaction.

With rice water a very strong reaction was present in thirty minutes, and an intense reaction in forty-five minutes.

The significance of these data is apparent.

It is, therefore, suggestive that the albumin is the element that takes up the acid for the production of an acid albumose. And it is further suggested that from foods containing little or no albumin to utilize the HCl, but that yet encourages its production, that we will have the acid free in the stomach, and the establishment of a hyperacidity with the usual symptoms of continued vomiting, unremitting hunger, and wasting.

Inquiry into the deficiency or absence of HCl after certain foods is of paramount importance, for here we find a very different clinical picture—one of intestinal disturbance, highly

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suggestive of bacterial invasion, with fermentation and the establishment of a condition so very common among artificially-fed infants.

It has been shown that in breast-fed infants the appearance of free HCl is precocious; which is a suggestive explanation for the immunity against intestinal derangements usually enjoyed by such infants.

A case in point is reported by Knoepflmacher: A baby, taken with persistent vomiting that lasted over a protracted periods of weeks, during which time almost every food was tried that was thought admissable for the most delicate digestion, improved not at all, until the amount of albumins was greatly increased, when the stomach at once resumed its healthy activity. The vomiting ceasing entirely.

A second case, of high clinical value, was treated, perhaps, a year ago, by Dr. John Zahorsky, on these same lines: The baby, aged 6 months, had suffered for three months with the most persistent and excessive vomiting, for which it had been put on the most easily digested foods. Various modifications of milk, whey, rice water, etc., were tried. Sodium bicarbonate, atropin and other remedies were used, but without any material improvement. Examination of the stomach contents showed a high percentage of free HCl. The child was immediately changed from a diet containing one-half per cent casein to three per cent, with an entire cessation of the vomiting and a healthy gain in weight.

In conclusion, let me state the advisability, in every case of infectious enteritis, to examine carefully as to the condition of the gastric juice; and where such is lacking in HCl, to carefully detract the caseins until sufficient HCl is permitted to exist free in the stomach to stay the invasion; and, on the other hand, where hyperacidity is present, and every food has been tried, when the vomiting is *persistent* and excessive, and especially with the more delicate foods, that we increase the caseins—double or treble them, and give the hydrochloric acid a chance to do its physiological duty.

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Diphtheria Treated with Antitoxin and Pilocarpin.

BY E. W. SAUNDERS, M.D.,

ST. LOUIS, MO.

IT is now several years since I published my observations on the treatment of diphtheria with antitoxin and pilocarpin. These years have only served to strengthen me in the position then taken. My conviction has not been shaken, and the use of pilocarpin as a valuable adjuvant to antitoxin in the treatment of this terrible malady deserves to be generally recognized.

In another place (*Therapeutic Gazette*), I have discussed extensively the mode of action and the special indications for this drug. Suffice it then to repeat that the activity, which gives it a special place in the treatment of diphtheria, is, that it stimulates the excretion of the toxin, and excites the activity of the leucocytes.

The specific action of the antitoxin is manifested in a varying interval, which ranges from 12 to 36 hours. During this time the organism is at the mercy of the diphtheria toxin, and degeneration of the nerves and cardiac muscle may be initiated. It follows that paralysis may result in spite of treatment with antitoxin, which can only neutralize the free toxin in the blood or tissues, but is powerless to separate the poison from its attachment to the nervous system. Therefore, a remedy is necessary to excrete the poison during this interval and prevent its union with the nerve structures. Such a remedy we possess in pilocarpin.

As soon as the toxin is neutralized by the antitoxin injected, the leucocytes finish the work by destroying the bacteria in the throat. It is necessary, then, to have active leucocytes present, for not only must the diphtheria bacilli be overcome, but also other bacteria, which are almost invariably associated with the specific micro-organism. An active leucocytosis is necessary for their destruction, whether we adopt the theory of phagocytosis, or the theory of bacteriolysis. Pilocarpin increases the formation of the white blood-corpuscles, and thus its effect, even in convalescence, is decidedly favorable.

In examining the statistics published by various writers,

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it is obvious that the death rate of diphtheria is still unnecessarily high. Richardiere, in 1,115 cases, found a mortality of 11.5 per cent. In non-operative cases only 5.5 per cent died. Baginsky makes the death rate about 9 per cent. American statistics, gathered from various sources, give a death rate varying from 5 to 15 per cent.

I feel that these figures can be markedly reduced. Our position in regard to diphtheria should be the same as in the prophylaxis of puerperal infection; that is, in case of death, the attending physician must be blamed until he can prove himself innocent. I am aware that many conditions contribute to the mortality that lie outside of the control of the physician; *e.g.*, the physician not being consulted until four or five days have elapsed, after the onset of the disease. But, whenever the physician has control of the disease from the beginning, there should be very exceptionally a death.

Again, the accidents following the diphtheritic infection, are still very numerous. Some authors assert that the various forms of post-diphtheritic paralyses are more common now than before the treatment with antitoxin, and the reason given is that more of the severe cases survive.

Here, too, the after-affects, as published, seem rather too frequent; and I am convinced that the pilocarpin treatment will also reduce these sequelæ.

In the past seven years I have treated in the neighborhood of 300 cases of this disease in private practice, and in the Episcopal Orphans' Home, and I have not a single death on record. Some of these cases were treated by one of my assistants, more or less under my own personal supervision.

Of course, this does not include some serious cases, in which I have been called in consultation, but only comprises those which have been treated by myself or assistant from the beginning.

There have been no special sequelæ in any of these cases. There has been no case of severe nephritis, and only two or three cases of mild paralysis of the palatal muscles. One case showed slight strabismus for a few days.

Before the days of antitoxin, my mortality was no better than that of my neighbors, as far as I know. But, since the introduction of this remedy, I have not had to write the word diphtheria on a death certificate.

The uniform results that have followed this method, have

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made me enthusiastic concerning its efficacy, for which I hope I will be pardoned. The following rules serve as my guide in the management of diphtheria, and which have resulted in such a gratifying results:

1. In all cases exhibiting an exudate or a pseudo-membrane in the faucial mucous membrane, administer pilocarpin at cnce in doses sufficiently large to incite its physiological action (salivation, diaphoresis, etc.).

[This drug is very valuable in follicular tonsillitis, or even in the ulcero-membranous angina (Vincent), and in cases of doubtful diagnosis can do no harm.]

2. When there is the least suspicion that the case is diphtheria, pains should at once be taken to corroborate or exclude this provisional diagnosis; the membrane should be exemined microscopically, stained by the Loeffler or Neisser stain, repeated visits should be made during the day, and the progress of the exudate watched; the temperature, the throat, the pulse, and the cervical glands should be carefully considered, and if the evidence is rather in favor of diphtheria, antitoxin should be injected at once. A given case should never be allowed to go through the night without the injection, if there is any evidence of diphtheria. It is the promptness of using the specific remedy which insures the speedy favorable result.

3. The dose of antitoxin should be large enough to neutralize all the toxin present in the blood, and a sufficient excess which will neutralize all the toxin which may enter the circulation in the following week. Antitoxin must be present in the blood until the bacilli are thoroughly eradicated from the throat. A sufficient dose must be given at once, and need not be repeated. For a mild case 1500 units, a case of moderate severity should receive 2000 units, and a severe infection from 2000 to 3000 units.

4. Special attention should always be given to the antitoxin. I have seen lives lost because an inert preparation of antitoxin was used. It should be made by a reliable firm, and should not be too old. I regard six weeks as the maximum limit of the time after withdrawal from the animal that the serum should be regarded active when it is kept at the ordinary temperature. It is well known that serum deteriorates rapidly on standing at the ordinary temperature; this is particularly true of the sera of high potency. If only old serum

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can be obtained, the least concentrated should be chosen, and allowance must be made for the deterioration or weakening in strength, so that it is advisable to inject double the quantity that is ordinarily required. Even when kept constantly on ice, a serum that is more thad two months old should be regarded only about one-half the strength that is marked on the vial.

5. Even when the temperature drops to normal, and the membrane begins to cast off, the pilocarpin should be continued for one or two days in diminished doses. The leucocytes are thus stimulated, and convalescence hastened.

6. If the case comes under treatment after the fifth day, pilocarpin should be used with caution, on account of the danger of heart failure.

Other medication is rarely necessary, except possibly an initial purgative of calomel. Tonics are indicated during convalescence. I believe that applications to the throat can do no good, and many of them actually do harm. It is my rule, therefore, not to use local antiseptics, relying entirely on the salivation induced by the pilocarpin, which is not antiseptic, but acts as a detergent agent.

In conclusion, let me reiterate what I have stated elsewhere, that the fear which many in the profession entertain for pilocarpin is groundless. I have used it in thousands of cases in children, and have yet to see one instance where I thought life was endangered by it.

Problems in Infant Feeding.

BY JOHN ZAHORSKY, M.D.,

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WHILE it is well, at times, in the progress of any scientific subject, to pause and carefully study the ground over which we have safely journeyed, it is equally important to survey the field immediately before us, and form some conception of the extent and magnitude of the task in the future. That the way to a complete knowledge of substitute infant feeding is still very long, and that it is covered by many obstacles, some of which appearing insurmountable at present, even the most superficial observer must admit. The subject will be approached by citing experiences and observa-

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tions and then critically analyzing them in the light of modern physiological and pathological investigations.

I.

CASE 1.—Boy, aged 3 months, was fed on pure undiluted cows' milk since he was two weeks old. A relative of the patient's mother became very solicitous concerning the outcome of this feeding, and suggested that the baby be placed on laboratory milk. The infant had digested the pure cows' milk, and was growing steadily. But the mother, on hearing that it was improper to feed young infants on undiluted milk, readily consented to the change. Someone prescribed a milk mixture containing proteids 1.50, fat 3.50, sugar 7, pasteurized at 167°F.

But this milk, in two days, caused a violent indigestion. The stools were rather frequent, and contained much undigested milk. It took six weeks of careful feeding and nursing to restore the digestive apparatus to a normal condition.

CASE 2.—An infant, aged 5 months, female, had been fed on condensed milk since birth. The gain in weight was steady, the infant was fat and appeared well. Outside of a little constipation and some restlessness at night, nothing abnormal was found.

The family physician, knowing the imperfections of condensed milk, placed the infant on diluted cows' milk. This was pasteurized and prepared with the greatest care. Its source was the best obtainable, and yet it caused marked symptoms of indigestion, from which it took the infant many weeks to recover.

These two cases illustrate sufficiently clearly the fact that it is dangerous to change the food of an infant. Though the new food may be prepared carefully, and in full knowledge of the various constituents of human milk and the danger of bacterial contamination, it is often humiliating to find that we can not at once prescribe a food which will be properly digested and absorbed.

The examples given may be multiplied, but from these and other cases the following general rules may be drawn:

1. An infant fed for several months on condensed milk, as a rule, can not digest cows' milk.

2. An infant fed on one cow's milk, or milk from one source, may not digest that from another source.

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3. It is less dangerous to pass from a human milk to a rational substitute, than to replace a prepared condensed or dried food by a mixture of cows' milk.

These facts are sufficiently clear, but the problem is to explain them. The discovery of the cause of these peculiarities of digestion is very anxiously desired.

It is understood that in these cases bacterial activity, in so far as it relates to their introduction with the food, is out of question. These foods were practically sterile.

The explanation, as far as it has been unfolded, may be stated in a general way, that the infantile digestive organs require time to adapt themselves to the new food, since in their development, these structures are influenced by the fluids of the mother only.

In placing an infant on a new food, the clinician should bear in mind that a period of adaptation may be necessary for its proper digestion and assimilation; this period varies in length in different infants, from a few days to many weeks, depending on a great variety of factors.

Some light is thrown upon these obscure problems by the experimental researches of different observers. If we adopt the theory of Pawlow, that the digestive secretions vary with the ingestion of different foods, we can assume that the gastric or pancreatic activity is yet insufficiently developed, which results in an imperfect response to different combinations of the dietary constituents in the intestine. Normally, a certain quantity of food stimulates the glands to secrete an adequate amount of enzyme, but one combination of food may do this while another fails. What seems so hopeless about this fact is that one is not capable of estimating the enzyme-secreting capacity of the pancreas, which necessitates a food modification that can only be approximate. In beginning all new foods the quantity of each constituent must be very low, since we do not know how much enzyme necessary for its digestion will be furnished. This accounts for the rationale of feeding young infants highly diluted foods.

Another explanation of these individual peculiarities may be inferred from the theories which have been recently formulated in regard to immunity, hemotolysis, and cytolysis.

It is known that the introduction of blood or epithelial cells of any organ of one animal into the circulation of another, is followed by the formation of an antibody or a cytol-

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ysin in this animal. At any rate, the blood of the second animal, after repeated injection, acquires the property of dissolving the blood corpuscles and epithelial cells. And this property is absolutely specific; that is, the power to dissolve kidney epithelium, for example, can only come from injecting this epithelium; or the power of dissolving one animal's blood will result only when blood from that animal is employed. This property of the production of specific antibodies is not only a function of the body for overcoming infections and intoxications, but it is also concerned in the processes of anabolism or nutrition.

Especial interest in this connection must be ascribed to the reaction which follows subcutaneous injection of milk. This is known as Bordet's reaction, although Fisch described it about the same time, if not previously. If an animal receives subcutaneous repeated injections of milk, the blood of this animal soon acquires the property of precipitating the milk. This blood serum has been designated the lacto-serum. The property of this lacto-serum is specific, that is, it will precipitate that milk only which has been used in its production.

Hamburger (*Wiener Klinische Wochenschrift*, No. 49, 1901) has extended these researches, and ascertained that the blood acquires specific properties not only toward the milk, but to its individual proteid bodies. In separating the casein and the albumin, and using each in the experimental injections, specific precipitating substances toward each of these proteids was found to be present. The blood of the animal injected with casein, precipitated casein only, while blood of the animal injected with lactalbumin coagulated this proteid, but not casein.

Hamburger, reasoning from this, asked the question, "whether similar changes occur in the blood when cows's milk is fed to young animals?" A trial showed this not to be the case. The digestion and absorption of milk by the gastro-intestinal epithelium causes no specific antibodies to appear in the blood. Nevertheless, since the mucous membrane of the intestine is composed of cells, the surmise seemed rational that the presence of these antibodies in the blood may enhance the digestion of cows' milk. Young animals (dogs and rabbits) were treated by several subcutaneous injections of cows' milk. After this they were taken from the mother and fed on cows' milk. The result was negative.

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While this experiment has only a theoretic interest, analogy gives us at least a probable explanation of the adaptation which takes place in the absorptive and secretory cells of the digestive tract.

If a certain substance injected in the blood causes the formation of specific antibodies, the injection of a foreign food may also induce specific changes in the activity of the intestinal epithelial cells. During intrauterine life, the structures acquire definite properties under the stimulus of food obtained from the mother, and after birth their digestive cells respond readily only to the secretion from the mother. When a foreign food is introduced, a process of adaptation must first take place, before a healthy digestion is inaugurated.

Furthermore, the specificity of this cellular activity may be so narrowed by artificial foods, that milk from one cow or the special food (condensed milk, patent food, etc.) only will be properly digested. A sudden change to another food, however carefully adapted, may be disastrous. Altogether it is much safer to pass from human milk to an artificial food than to substitute one food for another.

The practical indication from these theoretical considerations is that in attempting to place an infant on another food, these changes must be made with exact gradations. A minute quantity of the new food must first be given, and then gradually increased.

The practice of giving an infant minute quantities of table food during the period of nursing finds its theoretical explanation. The infantile digestive apparatus must be taught to adapt itself to a great variety of normal food constituents.

It is obvious that the practice of beginning substitute infant feeding by low percentages is entirely vindicated.

But the problem of individual adaptation is still unsolved, and each infant must be fed by trial and experiment rather than by any definite formula.

II.

If the susceptibility to various foods as a whole varies to a degree that is often puzzling, it is made more complex by individual idiosyncracies to the different food constituents.

There are infants who can never digest casein of cows' milk, even when persistently tried. Others, again, even when several years of age, will get violent attacks of colic from

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caseinogen, while they may digest and assimilate a whey and cream mixture.

Another class of infants can not ingest fat, even in small percentage, without acid vomiting or diarrhea.

This naturally leads to an inquiry into the digestive secretions. What processes are necessary for the elaboration of caseinogen?

Observations indicate that in the presence of an active gastric juice, with a strong percentage of hydrochloric acid, caseinogen is well digested.

This is definitely shown by the reports of cases, in which a hyperchlorhydria was cured by the feeding of milk rich in casein (Knoeplemacher, Saunders). But exact observations on the opposite condition are lacking. The condition of achlorhydria is very difficult to establish in infants, since the albuminoids neutralize the hydrochloric acid.

The nearest explanations must come from similar conceptions, as have been considered under the first problem. Each individual constituent demands a specific activity of a cell, and this cellular activity varies. Hence personal idiosyncrasis can only be discovered by trial, and its explanation is one of the obscurest problems.

III.

A greater susceptibility towards intestinal bacteria and bacterial products is one of the demonstrated peculiarities of infancy. The newly-born infant may be easily upset by dietary imperfections, but is far less susceptible to gastro-enteric intoxication than the older infant fed on artificial food. In the Bethesda Foundlings' Home the record of several years show that infants very rarely die of gastro-intestinal infection before the age of six weeks or two months. This has also been corroborated by other observers. The usual explanation has been that the young infant at birth has a certain resistance to infection which gradually diminishes as it grows older.

Exact scientific experiment confirm this. Thus, Moro (*Wiener Klinische Wochenshrift*, No. 44, 1901), found in testing the blood serum of the newly-born infant aud older children, that the ratio of the bacterial power stood as 59 to 48. Presumably, the bactericidal power of the intestinal secretions depends in a great measure on the same power of the blood. It follows that the newly-born infant is not readily infected.

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Observations have also definitely brought out the fact that artificially fed babies are much more readily infected than those fed at the breast. Moro's experiments also throw light on this fact He discovered that the ratio of bactericidal power of the serum obtained from a breast-fed baby to that of an artificially fed baby stood as 77 to 33.4.

This is an astonishing difference, and at once makes clear many peculiarities as to the morbidity and mortality among babies artificially fed. In the home above mentioned, in the last seven years not a single infant which was nursed by its mother died of gastro-enteric infection, while among the artificially fed babies the mortality from this cause varied from 5 to 20 per cent.

Furthermore, it was found that while the bactericidal power of an infant's serum was 56 per cent at birth, after two weeks of breast-feeding, this power rose to 73 per cent; but after feeding the same baby on artificial food for two weeks, it fell to 41 per cent. The bactericidal power is, therefore, greater as long as the infant nurses the breast, and falls rapidly after substitute feeding.

The source of these alexins is evidently the human milk, but no alexins have been discovered in this secretion. The presumption is that these alexins are combined with the albuminoids in mother's milk, and are liberated during the process of absorption.

These experiments should be extended, and may serve to form the ground for selecting definite artificial foods. Practical experience, already give some hints as to possibilities. It is well known, that the deathrate among infants fed on condensed milk and dried foods is much higher than among those fed on cows' milk. Does the serum of an infant fed on condensed milk contain these antibodies in a smaller percentage?

Careful experiment on the bactericidal power of infants fed on various foods, on cows' milk heated and unheated, and on differerent combinations of the same, is one of the fruitful tasks of the near future.

If it is determined that certain foods are lacking in alexogenic substances, the problem will be to discover something which will make up for this deficiency.

Meanwhile, we must be content with certain general rules which guide in the selection of foods. An infant may be immune to one micro-organism, but readily succumb to another,

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whose virulence may be even lower. Babies fed on condensed milk, and prepared foods especially, are susceptible to intestinal infection. If a change in the food is made, this must be very sterile at first; very gradual must be the change to a raw milk; but the feeding of raw cows' milk is ideal, and this end should always be sought.

IV.

Of considerable value in the treatment of gastro-enteric disorders, is the knowledge of the effect of foods on intestinal peristalsis. In general, it is known that starches are constipating, while fats and sugars are laxative. But, beyond this, nothing is very definite. And in practice difficulties continually arise.

In diarrhea, it is the custom to administer those albuminoids which are supposed to be most readily absorbed and digested. Whey proteids is highly recommended, but in an extended experience I have found that in cases of irritability of the intestine, whey almost invariably increases the number of passages. Why this is true, is an unsolved problem. Does the fluidity of this food cause the diarrhea? Is lactalbumin in in itself a laxative?

On the other hand, it has been pointed out by Holt and others that casein is constipating. Hence its withdrawal in certain forms of diarrhea is contraindicated. The serious drawback which it possesses, that of coagulating in large lumps, must be modified by dilution and admixture with gruels. It has been even recommended that the casein be coagulated with rennet, the curd thoroughly broken up, and fed in this way. The reports as to its value are encouraging. As fat may cause irritating products when digestion is slow, skimmed milk should be employed to prepare this coagulated milk.

It is not at all clear that casein is the most harmful proteid in cases of gastro-enteric infection. Probably it resists bacterial decomposition with greater tenacity than the lactalbumin. Some observation on the relative value of these food constituents in the convalescence of summer diarrhea is very needful.

V.

The difficulties encountered may be approached from another standpoint. I refer to the theory of solution and osmotic pressure.

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The first question which demands an answer is: Must all food constituents be in solution before absorption takes place?

All investigation tends to confirm the affirmative side of the question. Even the fat must be split up by a ferment (lipase) and saponified before it can be taken up by the cell. Proteids must be changed to soluble and diffusible proteoses and peptones before their entrance into the blood is possible. As such they exert osmotic pressure, while in the natural state this pressure is inappreciable.

Koeppe has demonstrated that the osmotic pressure of human milk and blood serum is identical (*Jahrb. f. Kinderheilkunde*, 1900). The osmotic pressure in cows' milk is about the same. According to Soldner's analysis (*Zeitschrift. f. Biologie*, 1896), a constant relationship exists between the sugar and ashes of human milk, or cows' milk. The percentage of ashes is inversely proportional to the quantity of sugar. A milk which contains little sugar will contain much salt. On the other hand, a milk rich in sugar will contain a correspondingly less amount of salt ashes. The following table is from Soldner's analysis:

HUMAN MILK.		COWS' MILK.	
Ashes.	Milk Sugar.	Ashes.	Milk Sugar.
0.18	7.3	0.67	5 0
0.20	7.5	0.71	4.8
0.24	6.7	0.76	4.6
0.25	6.3	0.86	3.5
0.34	5.7	0.93	3.3

While this relationship is not absolutely constant, the variations run sufficiently parallel to substantiate the assertion that the organism maintains the osmotic pressure of milk about the same.

It has been stated that all the nutritive functions of life consist in an adjustment of the osmotic pressure of the fluids in the body separated by semipermeable membranes. While osmosis constantly tends to equalize the osmotic pressure of the fluids, other factors as constantly tend to disturb this equilibrium. When milk is placed in the alimentary tract, the first disturbance occurs in the stomach from the admixture of the gastric secretions and the action of the enzyme. Endosmosis, or absorption, results from this.

While the natural food, then, has almost a constant os-

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motic pressure, this is seriously disturbed in many of the so-called milk modifications. May not many foods disagree for the simple reason that the ósmotic pressure is such that a proper adjustment for endosmosis can not be found?

Thus the case first cited which thrived on pure cows' milk, was made sick by modifying the milk, when the osmotic pressure was necessarily lowered.

Clinically, however, the osmotic pressure does not seem to have much influence. Young infants, for instance, usually thrive on very dilute milk mixtures, the osmotic pressure of which must be very low.

Though this theory is very attractive, yet practically it can lead to little result, since it is impossible to determine the isotonic co-efficient of the semipermeable membranes, *i.e.*, the gastro-intestinal mucous membrane, and without this factor a working formula can not be established.

But the lesson is plain, in the modification of milk the osmotic pressure should always be adjusted so that it approximates human milk.

VI.

The problem to be considered in conclusion is the relative function of the inorganic salts in the food ingested. In the modification of milk they are usually ignored, not so much that they are regarded of no value, but because their adjustment is an unknown problem.

But such a hopeless view should not be taken. Already considerable light has been thrown on the function of inorganic compounds, and from these facts certain theoretic principles can be formulated by which the feeding of infants must be governed:

1. Normal osmotic pressure should be restored when a deficiency of the diffusible substances is present in the food, by the addition of salts.

2. The electric conductivity of the fluids depends on the presence of inorganic molecules, foods poor in this (as albumen water) should be enriched by the addition of salts.

3. In the process of metabolism, sulphuric and phosphoric acid is formed by oxidation from the tissue proteids, an adequate quantity of basic radicles must be present in the blood to neutralize these acids.

4. It is known that citrates exist in the milk, possibly other

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compounds may be found which also contain a metal in combination with an organic compound. Certain dried and heated foods probably do not contain these free bases in sufficient quantity.

5. Sodium chlorid must exist in all foods, but as to the other salts we are yet in the dark.

[1460 SOUTH GRAND AVENUE.]

A Perforated Meckel's Diverticulum.

BY ROBERT LEUDEKING, M.D.,

ST. LOUIS, MO.

THE connection of Meckel's diverticulum with obstruction of the bowel is a well-recognized condition. In an old book on topographic anatomy, by Hyrtl, quite a discussion is devoted to the possibilities for obstruction arising from Meckel's diverticulum through its attachment to the abdominal wall, or the attachment of its terminal end to the mesentery; or subsequently by the formation of adhesions of such diverticula as are unattached, or by attachment to some portion of the intestine. It is rather peculiar that in the work mentioned, which is full of surgical references, no mention is made of the appendix. The matter of the relation of Meckel's diverticulum to intestinal obstruction is handled thoroughly by Treves, and during the past year I have noticed a number of publications, viz., one by Thompson, of Boston; one by Snow, of Buffalo, N. Y., and one by Purvinance, of Steubenville, Ohio. Surgical interference was practiced in only one of these cases, and unsuccessfully.

My case had the following history: A boy, about 5 years of age, with obstinate constipation from early infancy; it was extremely difficult to get the bowels to move, yet he had never had attacks of abdominal pain or colic. On this occasion he was seen with symptoms pointing to some obstruction; there was the usual difficulty in securing a stool, some vomiting and low temperature. The condition was supposed by the attend-

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ing physician to be intussusception; this was somewhat strongly indicated by some resistance and dulness to the left of the median line. Efforts were made to relieve him by rectal irrigations, high clysters and the introduction of air. The condition was relieved, and for a time the trouble seemed to pass off completely; all the threatening symptoms vanished. But soon the difficulties set up again and the same features of vomiting, rapid pulse, low temperature and serious symptoms pointing to abdominal trouble, returned. When I saw the boy the symptoms of collapse were very marked; the abdomen was distended, and I found all the features of diffuse general peritonitis, and still it was possible to make out in the left mesogastrium a circumscribed tumefaction.

Operation was suggested, but as no good result could be promised, this was rejected. When the case came to post-mortem it was found that there was a perforation of Meckel's diverticulum. On opening the abdominal cavity a large accumulation of pus was found, and in this was found a loop of the intestine to which was attached the perforated diverticulum. In the specimen presented a toothpick is introduced and carried to the distal point and passed through the perforation at the end of the diverticulum in the abscess cavity. The end was attached to the mesentery, forming a complete arcade.

All the features were seen in this case that are met with in appendicitis when an abscess cavity has developed about it. When the abdomen was opened a loop of the intestine was found caught in the arcade, through which could be passed the finger, but it was loosely engaged and inspection showed there was no gangrene. The loop of intestine had slipped into this arcade and became ensnared and gave rise to the obstructive symptoms. It subsequently became disengaged, the bowels moved a little—some fecal matter and flatus was passed; but sufficient damage had been done to the distal end of the diverticulum, infectious process was favored and we got a perforation after the method of perforation of an infected appendix.

The vermiform appendix from the same case is here shown. It was very long and interesting, because it possesses quite a marked mesentery.

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Enterorrhaphy by the Connell Suture.

BY LOUIS RASSIEUR, M.D.,

ST. LOUIS, MO.,

ASSISTANT SUPERINTENDENT ST. LOUIS CITY HOSPITAL.

A BRIEF history of the case wherefrom the specimen was taken, is as follows: On the morning of December 22, 1901, at 10:30 o'clock, the patient arrived at the City Hospital; he was brought in on a stretcher and was in extreme shock; he was covered merely by a heavy woolen blanket. On raising the blanket a mass of semi-soiled towels were seen on the abdomen, apparently covering a wound. When the towels were removed several coils of intestines were seen lying on the abdominal wall, having made their egress through a transverse incision midway between the umbilicus and pubic bone. One of the coils of intestines was severed, even the mesentery was injured.

The patient was heavily stimulated and prepared for operation, in which it was my pleasure to assist Dr. H. L. Nietert. A piece of gut, nine inches long with lacerated mesentery, was excised. An enterorrhaphy was made after the method described by F. Gregory Connell. The bladder had almost been penetrated by the original laceration and a few sutures were here inserted. After replacing the intestines and flushing the peritoneal cavity, gauze drainage was employed, and a hot saline pack was applied. The patient was put to bed one and a half hours after entering the hospital; after regaining consciousness the patient was weak and despondent. His urine showed granular casts and albumin. Death ensued at 9 p.m., December 25th.

The post-mortem revealed, among other things, this specimen of enterorrhaphy here presented. It is interesting in that the luster of the peritoneum is well maintained except at the site of apposition of the drain. Secondly, none of the sutures can be seen, illustrating the degree of approximation. Thirdly, the diaphragm is small.

Dr. Nietert employed this method of suture in two other instances. One was in a case of gunshot wound of the jeju-

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num and root of the mesentery. The condition of the patient was very bad, and he died three hours after the operation. The third case was one of gunshot wound of the stomach, in which an uneventful recovery was made.

I have, in conjunction with Dr. Willard Bartlett and Dr. Nietert, employed this method of suture in enterorrhaphy in six dogs. Our results were universally good and encouraging.

Dr Nietert has devised a modification of the Connell method in the application of the last suture. Primarily the last four sutures are left untied; of these four, the threads of the first and fourth are permitted to overlap one another; the second and third sutures are now applied and tied. Traction is now made on the first suture causing an inversion and flattening of the bowel; the first suture is tied and the gut contour allowed to return to normal. Traction is now made on the fourth suture causing an inversion and flattening of the bowel. The fourth suture is tied and the gut contour allowed to become normal. Thus the enterorrhaphy is completed, avoiding the introduction of the looped needle and thereby hastening the completion of the enterorrhaphy.

Eruptions Associated with Malarial Infection. — A very important contribution on this subject is made by Engman (*Medical Bulletin Washington University*). He reports eighteen cases. His conclusions are as follows:

1. That it is highly probable that certain affections of the skin, as pruritis, urticaria, angioneurotic edema, erythema multiform, pompholyx, zoster, eczematoid eruptions and gangrene may be due to malarial poisoning.

2. That in such cases there is generally a periodicity in the intensity of the eruptive symptoms.

3. That there may be marked or slight constitutional disturbances or the eruption may occur without any other symptom of paludism.

4. That nephritis may complicate the picture in severe cases, and seems to be the apparent cause of the dermal manifestations, whereas the malarial infection is the sole etiological factor.

5. That when an eruption is associated with malarial infection it quickly recovers under specific treatment.

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LEADING ARTICLES.

TREATMENT OF CHRONIC MYOCARDITIS.

By W. L. JOHNSON. M.D., St. Louis, Mo.

In the treatment of this affection there is some lack of agreement —probably more apparent than real—as shown by the discussion on the paper of Prof. Musser, read at the last meeting of the American Medical Association (*Journal American Medical Association*, January 11, 1902).

Dr. Musser uses, at times, the nitrites, and to their use Dr. Beates, in the discussion, objects on the ground that there is not increased arterial tension, but, on the contrary, marked diminution thereof in these cases; that is, those consequent upon endarteritis, whether of the caronary artery or of the entire arterial system. Circulatory stimulants, and not circulatory depressants should, therefore, be used.

In studying the mechanics of the vascular system, we see that there are several factors in the maintainance of a normal flow, the disturbance of any one of which will bring about abnormal relations:

1. The force and frequency of the heart beat.
2. The peripheral resistance.
3. The elasticity of the arterial walls.

Keeping these factors in mind, let us study for a moment the conditions found in chronic myocarditis.

According to Struempell, there are two stages of this disease: (1) the early, in which the pulse is full and strong, and (2) the later, in which the pulse becomes weaker and of lower tension.

Hence, in this early stage, there can be no valid objections to the use of vaso-dilators, or, as Balfour calls the nitrites, "vascular stimulants," thus lessening the peripheral resistance, and thereby lessening the work of the heart. More than this, a better blood supply is furnished the heart muscle itself, by the increased blood supply of the coronary artery. The congestive state of the heart, which is said to underly chronic myocarditis, is thus relieved. Pasquier accomplished

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this by bleeding, and ascribes much of the degeneration to this congestive stage of the heart.

If, however, the heart is inadequate, by reason of its greater involvement and loss of muscular fibers, measures must be instituted to strengthen what remains of the muscular apparatus, and this is accomplished by digitalis, and the nervous mechanism is strengthened and controlled by strychnine.

Again, if both factors are at work—inelasticity of the arteries and inadequacy of the propelling force—there are clinical and theoretical reasons for combining measures.

Thus, in giving digitalis alone, we increase arterial tension as well as strengthen the systole, and prolong the diastole of the heart. If, however, we reduce this tension of the arterioles, we overcome the resistance (hence, lessen the heart's work), a better flow is maintained, the aspirating power of the heart has a goodly supply of blood on account of the better venous return, and, in general, a more nearly normal circulation is established.

In other words, if we have a Davidson's syringe whose bulb is chiefly affected, we would, if it were possible, strengthen the bulb apparatus. If, however, the tubing were markedly involved, and offered resistance to the propelling force of the bulb, we would endeavor to dilate or remedy that so as to conserve the bulb. Or, if both were equally concerned, we would strengthen the bulb and correct the caliber of the tubing.

This is a homely and perhaps not positively accurate comparison, but it will probably be of help in making our stand clear.

Rest and nourishment are, and always will be, the first requisites in the treatment of these arterio-sclerotic changes, and since frequently both heart and blood vessels are equal participants in the degenerative change, we will often be called upon to use both remedies, or their congeners.

THE ETIOLOGY OF ACUTE DYSENTERY.

The history of the experimental and clinical investigations which have gradually unfolded the etiology of dysentery is long, but apparently the research is near its end, since the offending micro-organisms have been finally discovered.

Twenty years ago, Austin Flint declared that epidemic and spo-

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radic dysentery depend on the same special cause, which is probably microbic. Recent bacteriologic discoveries prove this proposition. While at least two specific forms are recognized, the proof is practically complete that this affection is a specific disease, depending on a special micro-organism.

Amebic dysentery occurs in the tropics, but is also found in the United States. The amebæ dysenteriæ were first seen by Lambly in 1859, and very fully described subsequently by Losh. Later, studies by Osler and his students, demonstrated that it is most frequently the causative agent in cases occurring in the United States.

But from many parts of the world and from the United States came reports that the ameba was not found in more than half the number of cases. Gradually the clinical idea became fixed that two forms of dysentery prevailed, the one amebic and the other caused by some other micro-organism. Then followed a long and tedious search among the intestinal bacteria for the specific micro-organism. Arnaud found the colon bacillus constantly present in sixty cases, was able to produce dysentery in animals, and declared this bacillus to be the specific cause. He believed that changes in temperature may produce changes in the mucous membrane, which favors the pathogenic properties of the normal intestinal flora. Bertrand and Baucher made bacteriologic studies of the stools of dysentery in a small military epidemic. Eight species of organisms were isolated, none of which possessed any distinct pathogenic properties. They concluded that a particular union of micro-organisms is necessary to produce the disease. Other observers discovered other bacteria, but the difficulty in all cases was the fact that while the presence of a certain micro-organism could be established, no proof of its causative relation to the disease could be definitely fixed.

The discovery of the Gruber–Widal reaction opened a new field for the demonstration of the pathogenicity of bacteria. As soon as the value and specificity of this reaction was established, pathologists were not slow to avail themselves of the phenomenon. The causative relation of certain bacteria to morbid processes received new proof; *e.g.*, typhoid bacilli, cholera bacilli, etc.

But it remained for a Japanese, Shiga, to isolate the bacillus, and by means of the reaction mentioned, demonstrate its etiologic rela tion. Subsequently, Flexner, in studying cases of dysentery, was able

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to find a bacillus, which gave the Gruber reaction, and which in its essential characteristics resembled Shiga's bacillus. Kruse found an identical bacillus in an epidemic in Laar, Germany.

During the last summer, students of Dr. Flexner, from an extensive study of the bacteriology of this disease in different parts of the United States, and a careful comparison of the bacillus obtained from this material and that described by Flexner and Shiga, conclude that the bacillus in all cases is identical.

It seems, therefore, demonstrated that, beside the amebic dysentery, the most frequent case of this disease is the *bacillus dysenteriæ* Shiga.

This micro-organism morphologically resembles the typhoid bacillus. It readily grows on the ordinary culture media. Gelatin is not liquified, milk is not curdled, and sugar is not fermented. It is very slightly motile and recently flagella have been demonstrated. Colonies on gelatin have the appearance of a grape leaf.

While these two micro-organisms cause the vast majority of cases of epidemic, it must still be considered as very probable, at least, that other bacteria may occasionally induce a colitis.

THE AMERICAN NATIVE PASSING AWAY.

The struggle for existence and the battle between different races has laws, the complexity of which baffle the keenest mind; in fact, so profound is our ignorance concerning the extinction of an organic being that we marvel, "and as we do not see the cause, we would, invoke cataclysms to desolate the world, or invent laws on the duration of the forms of life."

The usual reason for the extinction of the red man of American is the principle of the survival of the fittest; and philosophically the scientist shrugs his shoulders and bows to the inevitable law.

We have heard also, not long since, of the negro race of America, which is said to be on the decline, and must inevitably become extinct. Another example of the "death of the unfit."

But now, the startling truth is hurled at us, that the young American race is passing away. The sons of the revolution, and the daughters of the pioneers of liberty, are dwindling in numbers, and ultimate destruction of the race is foretold. At least such is the painful con-

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clusion of Engelmann (*Philadelphia Medical Journal*, January 18, 1902) in an extensive study of the fecundity of American women.

He admits that great difficulties exist in securing reliable data, but he studies the subject from two different sides; namely, the birth rate per thousand of the entire population, and the fertility of the individual woman. The results of both inquiries are similar.

On account of the meagre statistical data at hand, he chooses two states, Michigan and Massachusetts. In the former state he finds the American-born of American parents only 12 per thousand population, while in the latter the figures are 17.3. When it is considered that France, with a birth rate of 22.4 per thousand is decreasing in population, these figures appear in striking contrast.

In studying the fertility of the individual woman, he has recourse mainly to statistics showing the number of children to each marriage. In Michigan 2.1, and in Massachusetts 2.7, children are born to each marriage. When these figures are compared with the number of births of Russians (5.5), or Prussians (4 2), to each marriage, the deficiency is obvious.

While these statistics are taken from comparatively small communities, their import is significant, and impels the scientist to corroborate their correctness, by an examination of the family increase in other States. In a personal communication, Dr. Engelmann states that the Census Bureau will take up this subject in the near future, the report of which will throw additional evidence on this important topic.

But the extinction of the American native can not be attributed to the superiority of other races, as in the case of the negro and Indian, and Engelmann, having demonstrated the decreasiug fecundity of woman, also reports observations on the direct cause. Contrary to what should be expected from the progress of the obstetric and gynecic science, the race is not increasing. But no blame must be attached to the science; it is not sterility of women that is at the root of this condition, but, as Nathan Allen states: "There seems to be a settled determination among women approaching marriage, not to be troubled with the encumbrance of children."

While the blame is usually cast upon women, Dr. Engelmann's statistics indicate that it is not the American wife who reduces fecundity as much as it is the American husband. This is indeed gratifying, but it needs further corroboration. It might be better to place

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the blame on both husband and wife, until further study will reveal the true state. Our own limited experience in family practice, proves rather that it is the women that is unwilling.

It is sad, it is a pity, and a pity it is that it is true. Our noble American race shall dwindle away, because our refined, educated, and wealthy young men and women prefer to enjoy themselves otherwise than to rejoice in the richer blessings of the home ringing with the voices of many children.

In conclusion, we can mention a new factor in the evolution of the human life, namely, the knowledge and possession of the means to prevent conception. The race that has this will die.

THE CAUSATION OF HEMOGLOBINURIA.

It is not settled that hemoglobinuria can arise from other than toxic causes, although it is customary to describe one form under the title of paroxysmal hemoglobinuria, which has been found associated with various trophoneuroses, and hence has been attributed to disturbed nervous action. No blood corpuscles are found in the urine in this disorder. But in the toxic variety, which is much more common, blood corpuscles are usually present, but not in sufficient numbers to account for the discoloration. In reality, the coloring matter is methemoglobin, and not hemoglobin.

Any poison in the blood that causes a disintegration and solution of the erythrocytes will produce this symptom. Potassium chlorate in large doses, glycerin injected hypodermatically, carbolic acid and others may be mentioned among many chemicals which may induce a solution of these bodies.

Special interest at present is taken in the hemolysins, that is, specific antibodies which are produced by immunizing an animal against blood by injecting this repeatedly beneath the skin. But an animal can not acquire a poison that will dissolve his own corpuscles, hence it is not rational to assume that hemoglobinuria depends on such a process; the poison is probably not the result of the activity of the somatic cells, but the origin must always be sought in the activity of foreign living cell, most often bacteria or protozoa.

Ehrlich discovered tetanolysin in the cultures of the tetanus

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bacillus, and following this discovery, hemolysins have been described as generated by a variety of different micro-organisms. The ordinary pus-producing bacteria (stapholococci, *b.* pyocyaneus, etc.) will develop this poison at times in large amounts, but in ordinary infections this activity is masked by other more powerful effects. The bacillus diphtheriæ, bacillus typhosus, and other pathogenic bacteria give proof of the formation of such a substance at times, so also the colon bacillus.

A very interesting contribution to this subject has been made by Todd (*Lancet*), who has discovered that the bacillus megatherium, a non-pathogenic microbe, produces such a poison in all its cultures. The formation is almost entirely extrabacillary, and develops after two or three days' growth. It is a very unstable substance at ordinary temperatures, but may be kept for a long time at zero temperature. The action of megatheriolysin manifests itself in different degrees toward the blood of different animals. The blood of the guinea-pig is the most sensitive, while that of the horse is practically unaffected. Human blood is also very easily dissolved by this poison.

These studies throw some light on the possible production of hemoglobinuria, since it is conceivable that in severe infectious processes, when the resistance of the human body is seriously impaired, a non-pathogenic bacterium, like the bacillus megatherium, may find some locality to form an active colony, which in a few days may liberate sufficient toxin to cause the appearance of hemoglobinuria. It is not unreasonable to suppose that paroxysmal hemaglobinuria may be produced in this way, the micro-organism not giving rise to any other symptoms.

But the subject is made more complex by the fact that normal blood serum possesses antihemolytic properties. This property may be increased in quantity by the injection of a hemolysin into the blood in small repeated doses; no doubt it may be very much diminished by different diseases, *e.g.*, malaria. The antihemolysins, like the antitoxins, are specific bodies which are utilized by the body to overcome animal poisons. A deficiency, whether congenital or acquired, predisposes the individual to disintegration of his own corpuscular elements, and hence to hemoglobinuria.

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EDITORIAL COMMENT.

Medical Septicopyemia.

Septicemia and pyemia are commonly associated with surgical diseases, and Forchheimer has tersely stated that the concept of sepsis from a medical point of view is one which is not accepted by the large body of physicians. Yet a septicemia without a surgical lesion is not only possible, but must be included in the nosology of internal medicine. The entrance of the pyogenic micro-organisms is affected most commonly through the respiratory tract. Such diseases as tonsillitis, influenza, diphtheria, and pneumonia may primarily induce changes in the mucous membrane that allows the entrance of bacteria into the circulation. All practitioners can recall septic sequelæ following simple infections of the upper air passages. Prolonged febrile movement, chronic emaciation, recurrent febrile attacks, repeated chills and perspiration, multiple abscesses and indefinite joint pains, these are the most common symptoms that indicate the entrance of pathogenic micro-organisms into the blood and the presence of a septicemia.

Spring Fever.

Eronosus, or the "spring disease," popularly termed "spring fever," in reality has no specific existence; and even when an inquiry is instituted into the peculiarities of the diseases of springtime, no striking anomalies are found. It is known that several infectious diseases are more frequent at this time. Among these, pneumonia, the exanthemata, and cerebro-spinal fever deserve special mention. But none of these can even remotely be connected with eronosus. Rheumatism in many forms is common at this season, and, unquestionably, may be the exciting cause of the lassitude and joint pains in many instances. As a consequence of the prevalence of influenza during the winter, many cases of parainfluenzal neuralgia and neurasthenia extend far into the summer months. Beyond these conditions, it must be admitted that on the approach of warm weather the human body which has be n stimulated to activity by cold for many months, becomes indolent. The physiologic processes that have worked hard to procure an adequate heat supply are still active, internal oxidation

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surpasses the actual needs of the individual, and consequently a feverish condition results.

Reversibility of Enzymosis.

That the activity of the digestive ferments depends in a great measure on the presence of other substances, besides the food to be digested is very well known; so, too, an excess of the changed food constituent will check the action of the enzyme. Thus the proteolysis or amylolysis will advance only to a certain point and will entirely cease unless the digested product is removed. It was assumed that the presence of the digested food had an inhibitory effect on the enzymosis, but now it is demonstrated that the enzyme is concerned in the bringing about a chemical equilibrium between the food molecules and water. When this state is produced, enzymic action ceases. The experiments of Kastle and Lowenthal have developed this law still more. They have shown that when lipase is added to an emulsion of neutral fat, the enzyme splits up the fatty molecule into glycerin and fatty acids until this state of equilibrium is obtained, but in a mixture of glycerin and fatty acids this enzyme is capable of forming a certain proportion of fat. In either case the enzyme forms this chemical equilibrium; that is, the action of lipase is reversible.

The reversibility is probably not limited to the lipolytic enzyme; some facts would seem to show that the proteolytic ferment has a similar property. A pure solution of peptone to which pancreatin is added would soon show a certain percentage of albumin.

It is reasonable, therefore, to assume that the ferments which are utilized to split up the food product may again find a use in the synthetic or anabolic processes of the human body. Many disorders of metabolism may find a rational solution in the theory of the reversibility of enzymosis.

Human and Bovine Tuberculosis.

The controversy on the dissimilarity of human and bovine tubercle bacilli continues with unabated vigor. Unfortunately, no new facts are being presented, and the debate promises to extend indefinitely unless the opponents will cease piling up arguments and

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commence to make experiments and collect exact data. One person will examine the records of hospitals and asylums and conclude that primary intestinal tuberculosis from cows' milk or meat rests on very meagre data; another will find considerable evidence to refute Koch's assertion. The real value of this discussion will be to make us more familiar with the present state of the knowledge on tuberculosis, but the point in question will not be made more clear by a prolonged and repeated reiteration of facts that are accessible to all.

Rupture of the Gall-Bladder.

Ashhurst states that speedy death from peritonitis is apt to follow rupture of the gall-bladder, and the concensus of opinion of the older surgeons was that it was one of the most serious accidents. Bile is normally an aseptic fluid, and there seems no good reason why it should be invariably followed by peritonitis. However, in cases of perforation of the gall bladder, due to gall-stones, the bile is infected, and peritonitis will invariably result. This conception, based on the character of the bile and our present knowledge of the etiology of peritonitis, is corroborated by the many patients who have recovered from this accident, and who have had bile repeatedly aspirated from the abdominal cavity. Willard has recently reported such a case (*New York Medical Journal*), and referred to many others found in literature. While the bile is a very irritating fluid, the peritoneum can withstand small quantities without marked symptoms, and even large quantities may be retained for weeks without septic signs.

Effect of Cigaret Smoking.

Prof. Ogg, superintendent of the Kokomo schools, in Indiana, shows that children addicted to cigaret smoking are two years behind the other boys in their studies. This can not be taken as proof that cigaret smoking obtunds the intellect, since the idle boy is much more likely to acquire this habit. Like many facts that are associated, it is difficult to make either one or the other the cause, but the association should be noted, and the youth given no opportunity to acquire this detrimental habit. Mo one has as yet collected any statistics showing that the cigaret smoker attained greater distinction in future life.

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CURRENT DISCOURSE.

Disease Among Christian Scientists.

Judge Ewing, the national lecturer of the Christian Scientists, gave a very active demonstration of the "error of mortal mind" when he fell to the floor of the platform unconscious and hemiplegic while addressing an audience on the subject of science and health. After he had partially recovered he explained to his anxious attendants that he had not been sleeping well of late, and was over-tired. An unfeeling newspaper intimated rather broadly that neither were the symptoms consistent with his teachings, nor was he naturally frank in his statements when suffering from an actual disturbance of his "gray matter." Observation has shown that hemiplegia is a very difficult "error" for the scientist to treat. The healer affirms that the patient can walk and the aphasic can talk, but the patient labors under what is called "chemicalization" by the healer, and does not talk or walk well enough to get about, or make himself intelligible —*Northwestern Lancet.*

Euthanasia.

The writer in the *Spectator* argues ably—if argument be needed—against legalizing euthanasia, but he takes the situation somewhat too seriously. The granting of such powers to the medical profession is probably as far off as ever it was. The public and the large majority of the doctors will sternly set their faces against the passing of any measure which would grant control over life and death, no matter under what circumstances, to any class, and which would serve, in a manner of speaking, to cast a shadow over that class. Perhaps in these times of stress and strain, when neurotics and degenerates abound, there may seem to be a greater tendency to advocate such a law as the legalizing of euthanasia than ever before, but it must also be borne in mind that like proposals were made before the commencement of the Christian era. Another point which was hardly given due consideration in the arguments concerning euthanasia in England is that even if doctors were to be legally invested with the power to end the life of a person stricken with a deadly and painful disease, that there would probably be but few sufferers who would avail themselves of the privilege —*Medical Record.*

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The Subject of Eating.

There are, of course, diseases which are aggravated by an injudicious diet, and in such cases the physician's advice as to character and quantity of food should be strictly followed; but with the person in robust health, it would be unnecessary and even absurd to live by routine. Change is the salt of life, and the aphorism may be applied with equal force to food. Persons who are slaves to their stomach will find in time that that organ is a hard master, and will regret that they ever put themselves under its rule. In these days, fads dominate a large number of people to the exclusion of hard sense, all theories are ridden to death, and among them those concerning food and drink. With regard to eating and drinking, the happy medium will be found the wisest course.—*Medical Record.*

Criticism of Scientific Language.

Criticism of scientific language has recently been indulged in by a writer in *Science*, and others have had their fling at our "sesquipedalian jargon," and our "sonorous Greek-Latin compounds." However true the complaint may be as to some writers, the fun is really inapt and cheap, especially when it is said that the use of strange technical terms conduces to inexact thinking and vagueness of expression. It is precisely the reverse of this. Only by these terms can inexact thinking and vagueness of expression be avoided. One of the chief functions of the scientist is to differentiate what has previously been held as homogeneous, and the differences perceived must be named in order to be brought to the minds of others and to delimit the phase that has been established. Another use of such terms is the saving of time and expense in speaking, writing, and printing circumlocutions. "Gastroduodenostomy," or "anisometropia" are not perhaps so pleasant in sound as "Worship Mumbo Jumbo in the Mountains of the Moon," but the object of exact science is not the making of music. A contemporary heads a recent editorial "Hepatopancreatic Cholecanatomy"—and even that cacophonous compound may be defended The only phase of criticism which obtains against the "words of learned length and thundering sound," is when they are used to "amaze the gaping rustics ranged around." In the plebification of scientific knowledge they must, of course, be avoided, but the endeavor to do so is always perilous, often calamitous, and always results in the haziness of concept and inex-

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act thinking falsely deplored by the critic as due to their use. It seems to be a fact that the criticism of techical terms comes from those who do not understand them, and who are incapable of acquiring an understanding ot them by reason either of inherent inability or of acquired indolence.—*American Medicine*

Public Health Bill.

A bill has been introduced in the House of Representatives to establish a board of health, and for other purposes. The object of this bill, as stated in the preamble contained in the first section, is to create a commission of public health, to be composed of a commissioner and a representative from each State and territorial board of health, the Surgeon-General of the Army and Navy, the Supervising Surgeon General of the Marine Hospital Service, or such other medical officer from either service as may be designated by the chief thereof, with the approval of the President, to be known as the "National Commission of Public Health," which shall be a bureau in the Treasury Department, and the duties of which shall be to collect and disseminate information with regard to the prevalence of infectious diseases in this and other countries; to collect and publish vital statistics; to prepare rules and regulations for securing the best sanitary condition of vessels from foreign ports, and for preventing the introduction of infectious diseases into the United States and their spread from one state or territory into another state or territory; and, in general, to make investigations, publish information, and formulate rules with a view to the preservation of the public health; and to perform such other duties as may, from time to time, be prescribed by the government authorities.

It, however, would seem—according to the provisions of the bill—that by the far greater part of the work which will fall to the lot of the proposed new board is that concerned with the prevention and spread of infectious diseases, and with quarantine matters.

The Marine Hospital Service, by the thorough manner in which in has performed these duties, has made for itself an enviable and world-wide reputation, and would it not be wiser to enlarge the scope and increase the staff and emoluments of a long and well-tried body of men, than to a large extent merge their offices in the suggested new board. Without prejudice, it appears that the formation of a commission of public health on the plan sketched in Mr. Ray's bill is unnecessary.

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DIAGNOSTICS.

In Charge of A. LEVY, M.D.

Diagnostic Value of the Cystoscope.

Most important is the early diagnosis of tumors of the bladder. Their early detection makes prognosis more definite, and their early removal possible. Villous papillomata, pedunculated and sessile mucous polypi, and epitheliomata are the most common, and are usually easily differentiated. Diverticula can usually be seen with the cystoscope. They are frequently associated with a trabecular condition, "vessie a colonnes." Chronic catarrh is shown by the pale and thickened condition of the mucous membrane, and the presence of mucous shreds. Prostatic enlargement, especially of the middle lobe, can usually be detected. Hyperemia of the trigonum vesicæ, a cause of frequent micturition, especially in the female, can be made out by the use of the cystoscope.

Ulcerative conditions are easily seen, but should be carefully differentiated from malignant disease. Calculi are, of course, readily recognized. The diagnosis of an encysted stone is made possible by the cystoscope, where the sound might frequently not detect it. Foreign bodies and their position in the bladder can be easily determined.

The cystoscope is of value negatively in excluding bladder disease, and determining disease higher up in the genito-urinary tract. By watching the jets of urine, as they come from the ureteral orifices, it can sometimes be determined whether both or only one of the kidneys is involved in certain cases of renal disease. Admixture, with pus or blood on one side, would point to the affected side. Nephrotomy or nephrectomy should only be performed after cystoscopic examination.

Early Ectoptic Gestation.

Browd (*Philadelphia Medical Journal*). In this article the author contends that the classical gross symptoms, pain, hemorrhage, and pelvic tumor are not the absolute essentials of an early ectopic gestation, and that with the exception of hemorrhage, all other symptoms and signs as pain, tumor, enlargement of uterus, fainting spells, darkened areola of the breast, pulsation of the blood vessels in the vault of the vagina, blue discoloration of the vagina, etc., are only

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adjuvants, and may or may not exist in a given case. He describes in detail six cases tending to prove the truth of this assertion.

He says that pain is not the absolute symptom of an early ectopic gestation, but appears, as a rule, in advanced stages, say the third month, or later; that pain may not appear in early tubal gestation until the very rupture of the tube; that local tumor does not always exist in the early stage; that oozing of blood from the uterus may or may not be present in a given case, and depends on the location of the ovum in the Fallopian tube; that interrupted hemorrhage from the uterus may be caused by other things than extrauterine pregnancy, such as pus tube, cystic ovary, imperfect abortion, polypoid endometritis.

A New Hemoglobinometer.

Every one who has worked with the hemoglobinometers in use at present, has experienced the difficulty of adjusting the instrument so that the colors to be compared were exactly alike. This difficulty is said to be met by a new instrument constructed by Gaertner (*Muenchner Medizinische Wochenschrift*, December 10, 1902), which he calls the hemophotograph. This instrument depends on the principal that the greater the concentration of the blood, the more will the actinic rays be absorbed in the passage of light through a solution of blood. Photographic paper, placed beneath such a solution, will be darkened according to the concentration. The advantage claimed for it are: (1) Comparison of identical colors; (2) great sensitiveness; (3) simplicity; (4) permanency of the result (the photographic paper may be added to the history); (5) cheapness of apparatus. It seems to us that an exact adjustment of the intensity of the light would be a difficult and serious matter.

Blood in Scarlet Fever.

Macki (*Lancet*) adds to the literature of the subject by a report of the results of blood examination in 25 cases of scarlet fever. All cases presented a moderate diminution in the number of red blood-corpuscles (3,500,000 to 4,000,000). All presented a leukocytosis. The leukocytosis serves to differentiate from measles in case of doubt. It also has some bearing on the prognosis. In most of his cases the leukocytosis began after 24 hours, and was at its height in mild cases on the fourth day of the disease. He thinks the degree of leukocy-

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tosis is in accord with the severity of the throat symptom. In septic cases of scarlet fever the leukocytosis is greater and lasts longer. Unusual leukocytosis, or sudden increase in number of leukocytes, would point to complications, such as suppuration of glands or elsewhere, middle ear disease, etc. The leukocytes are principally polymorphonuclear neutrophiles, but there is in nearly all cases a great relative increase of eosinophiles.

Referred Symptoms in Tuberculous Joint Affections.

One difficulty is the diagnosis of tuberculous joint affections is that the symptoms are rarely referred directly to the joint involved, but to some more or less distant part. Tuberculous spondylitis gives rise to an abdominal pain, which is so frequently mistaken for gastralgia, cholelethiasis and renal colic. If there is a suspicion of tuberculous disease of the spine, the patient should be tested by slight jars upon the head (Wilson). If the trouble is in the lower limb, he should be asked to come down to his heels. Thus will shown the existence of tenderness. Muscular rigidity, atrophy, disturbed function and night cry are other significant symptoms.

Blood-Pressure as an Incipient Symptom.

Among the many new diagnostic signs of early tuberculosis, one of the most important, according to Prof. Potain, of Paris, is a drop in the blood pressure. This drop is striking, and occurs long before any physical signs are present. The blood pressure must, of course, be tested with a manometer especially made for the purpose.

Retinal Lesions of Chronic Interstitial Nephritis.

It is generally recognized that examination of the eyes gives corroborative evidence in cases of chronic nephritis. Many patients who do not in the least suspect a kidney lesion will consult an oculist on account of failing vision. The following changes are given as the retinal lesions of interstitial nephritis: (1) Alterations in the contour, size, and color of the retinal vessels; (2) hemorrhages and the progressively changing exudates which constitute steps in the removal of the effused blood; (3) retinal edema; (4) degenerative changes in the neural elements of the retina and alterations in the layer of pigment epithelium; (5) deposits of exudates which perhaps have a significance somewhat different from that of the foregoing symptoms.—*Medical News.*

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Proteosuria.

Masenthal and Gies (*American Medicine*) reiterate the fact that peptone in the urine is rare, but albumoses, or more correctly, proteoses, or deuteroproteose, can be found in various diseased conditions. They deny that the "Bence-Jones proteid" which appears in the urine in large quantities in multiple myeloma of the bones, is really an albumose, and assert that it is a coagulable substance. Its exact nature is still undetermined.

Renal Calculus.

The symptoms of stone in the kidney are proverbially uncertain and unreliable. The freely movable stone will give rise to more symptoms than the spiky fixed one. The former produces more pain. The condition of the urine and inflammation of the pelvis have a bearing on the severity of the pain.—Bennett, *Philadelphia Medical Journal.*

Prolapsed Kidney.

A prolapsed kidney should be suspected in the presence of the following symptoms:

Palpitation of the heart.

Unusual fatigue on exertion.

Nervousness, restlessness, and insomnia.

Jaundice which is transient and intermittent.

Acute attacks of pain resembling renal colic.

Inability to rest comfortably, or to sleep on the left side.

Dragging pains in the loin, extending to the groin and down the thigh.

Epigastric pain to the left of the median line, or pain over the region of the heart.

Pain and tenderness over the region of the appendix, simulating chronic appendicitis.

Irritability of the bladder, more pronounced during the day, or after standing or walking.

Chronic digestive disturbances, such as gastric irritability, persistent intestinal distention, repeated bilious attacks, etc.

Pain in the right ovarian region which is sometimes misleading in the absence of other symptoms directing attention to the kidney.—*Philadelphia Medical Journal.*

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THERAPEUTICS.

In Charge of W. L. JOHNSON, M.D.

Atropin Treatment in Intestinal Obstruction.

Of late there have been a number of clinical reports on the use of atropin in obstruction. Dr. Adolf Weber (*Deutsche Medizinische Wochenschrift*, February 6, 1902) reviews 38 cases reported by various authors, and describes a case of his own. His case began with perityphlitis, with palpable tumor on right side above Poupart's ligament. At the end of fourteen days a diarrhea began, and the swelling in right side disappeared. Weber supposed that this was due to evacuation of the abscess by perforation through bowel. The stools soon became normal and patient felt well, when suddenly all the signs of obstruction set in. He then gives a detailed account of the symptoms and signs which led him to the diagnosis of obstruction, due to flexion or adhesions caused by a peritonitis existing at the time of the perityphlitis.

In the absence of stool for 80 hours, he injected 0.005 gram (!) of atropin. Redness of face and dryness of fauces ensued, pain ceased and some flatus passed after ten hours. Two hours later 0.002 grams of atropin was injected. Twenty-four hours after the first dose of atropin there was a small evacuation. Another injection of 0.003 gram of atropin was given. Copious stools followed, and patient was soon able to resume his work.

The author lays stress on the fact that the dose of atropin, in order to be effective, must be large. His first dose, 0.005 gram, being five times the accepted maximal dose. He felt safe in doing this, since the patient had previously received large doses of opium. He explains the failure of small doses of atropin on similar grounds. In case patient has not received opium previously, he recommends the dose 0.002 gram to begin with.

He then briefly reviews 38 reported cases in which atropin was used, and draws conclusions as follows:

1. Atropin is not contraindicated in any case of obstruction; volvulus, internal and external incarcerations, must always be treated surgically.

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2. Obstruction, following laparotomy and herniotomy, not due to volvulus or incarceration. are to be treated with atropin.

3. A previous course of opium explains the poor effect of small doses of atropin, and the tolerance for very large doses.

4. If the patient is under the influence of opium, an initial dose of 0.005 gram of atropin is given.

5. If the obstruction persists for twelve hours, a second dose of 0.005 gram may be given. If patient has received little or no opium for 48 hours, the initial dose of atropin should be 0 002 gram. and at the end of 12 hours possibly 0.005 gram. If no flatus or stool has passed for 24 hours after the first injection of atropin, operation is in order.

6. Any symptoms of poisoning should be combatted with morphine.

Hedonal.

Bowman (*American Medical Compend*, January, 1902) admits that the rational treatment of functional insomnia should be largely hygienic. including hydrotherapy, massage, regulation of diet, change of surroundings, etc.—just the conditions we are unable to control. Recently he has used hedonal in this class of cases, and its action has been so satisfactory that he hopes we have at last an ideal hynotic where it seems but necessary to produce cessation of conscious perception. The doses given in his illustrative cases were 15 and 20 grains, one-half hour before retiring.

Franz Hepner (*Prager Medizinische Wochenshrift*, December 19, 1901) has tried hedonal in 60 cases, and finds that in doses of one-half gram its action is uncertain, often as much as three to four grams being necessary to produce any effect. As much as eight grams were given, without any serious after-effects.

In eight of the cases its action failed entirely. Two of the cases complained of. headache the following morning. Three of the cases began vomiting shortly after the administration. Sleep usually lasts three to five hours; in some cases seven to eight hours. In cases where there was much pain, it failed to produce sleep. The author concludes that hedonal produces unpleasant after-effects in only a very small percentage of cases; its action is not influenced in any way by other drugs; in small doses its action is uncertain; that, owing to its unpleasant taste, it is difficult to exhibit in large doses.

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The Treatment of Chronic Gastric Catarrh.

Ewald (*International Medical Magazine*, December, 1901) says chronic gastric catarrh has undoubtedly two results which require therapeutic treatment; (1) Diminution in the production of HCl and pepsin; and (2) weakening of the motor function of the gastric musculature. For both we have an efficient treatment. Regarding (1), HCl should be prescribed in such quantities that the deficit will befully compensated. One should give as large and as frequently repeated doses as possible. Ewald gives as many drops of dilute HCl in a half glass of water every ten minutes for three doses after meals as the patient can stand, *i.e.*, take without having a too sour taste in his mouth. A better way, if one cares to go that far, is to introduce a 0.02 per cent HCl solution directly into the stomach through the stomach tube. He has given in this manner as much as 300 c c. twice daily after the two larger meals. To increase motility of the gastric musculature, tincture of nux vomica stands first In an infusion of cundurango bark (20 to 30 grams infused in 300 c.c. of water for twelve hours and evaporated to 150 c.c. by gentle heat) he puts 5 grams tincture of nux vomica and 5 grams dilute HCl. Massage, when performed by skilled hands—but only then—is valuable. Intragastric electricity is used whenever electricity is possible. One electrode is introduced into the well-washed stomach, the other over the belly. For stimulating influence, the faradic; for sedation, the galvanic (anode in the stomach) current four or five milliamperes, three to five minutes. He uses the common form of faradic apparatus with high tension and quick interrupter. The needle spray, preferably Einhorn's, is useful. To remove fermenting masses, wash out the stomach. To limit fermentation, the following:

℞ Resorcini resublim..... 5.0 (75 gr.)
Bismuth salicylat..... 10.0 (150 gr.)
Natrii bicarbonat..... 15.0 (225 gr.)
Sacchari albi..... 15 0 (225 gr.)
M. Sig.—Teaspoonful (small) every two hours.

The bowels must be regulated. The diet: Patients should never eat until fully satisfied. Beverages should always be taken lukewarm, never too hot or too cold. The strong alcoholic and carbonated drinks should be prohibited. Proper care of mouth, teeth, etc., should not be neglected. Hard boiled eggs, stringy and tendinous meats, warm flesh, meat marbled with fat—sausage and the like—are all prohibited.

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Eggs, even raw, are more often badly tolerated than is believed. Fat cheeses are difficult of digestion. The cabbage family is to be avoided, so also are beans and peas. Milk is not tolerated by all, yet theoretically it is best of all.

Prognosis and Treatment of Constipation.

Boardman Reed (*International Medical Magazine*, December, 1901) believes constipation is curable when its cause can be cured or removed. If the cause be some functional nervous affection, a displacement of the stomach or liver, chronic catarrh of the stomach or small intestines, excessively acid or deficient gastric juice, gastric or intestinal atony, or spastic contractions of the pylorus or of parts of the intestines, the condition is generally remediable by combined hygienic, hydriatic, mechanical and medical measures. Concerning, however, the two principal types of constipation, the atonic and the spastic, he believes them dependent upon a diseased condition of the nerve supply or muscular apparatus of the intestines themselves. Exercise, especially of the trunk muscles, must be practiced every day, to the end that both these and the muscles involved in peristalsis may be gradually strengthened up to the normal. This may require many months.

In catarrhal cases, you must first get rid of the catarrhal process, during this time securing evacuations with the least possible disturbance. Olive oil, by the mouth, with plenty of water, will sometimes suffice. Enemas of olive oil or cotton seed oil, or, in some cases, of a tepid or cold saline solution, will prove less irritating than any aperients by the mouth. In these catarrhal conditions, whether primarily causative or only complicatious actual curative results may often be obtained from small doses of the saline laxatives, such as the natural Carlsbad water, the Rubinat Condal water, or artificial solutions.

Remember that medicines helpful to one part of the alimentary tract may be harmful to another. Thus belladonna and Carlsbad salts have a possitively depressing effect upon gastric secretion lessening its quantity and strength.

A mixed diet is preferable in most cases. In catarrhal cases the starches may have to be interdicted for some time.

The spastic form is cured by reaching the neurasthenia or hysteria upon which it depends.

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Prescriptions.

For infantile syphilis:

Hydrargyri biniodidi (tablets)..... $^1/_{200}$ to $^1/_{100}$ gr.

Sig.—One three times daily, dissolved in water.

Later, give also: Sat. sol. kalii iodidi, gtt. j to iij, in milk ter die after nursing or feeding. Or anoint:

℞ Ung. hydrargyri..... ℥j
Lanolin..... ℥ij

M. Sig.—About one-tenth this once daily rubbed in abdomen, groin, axilla, etc.

Also: Syr. ferri iodidi, gtt. j to v, in water after meals for protracted period during intermissions and after specific treatment.

For painful menstruation:

℞ Potassi bromidi..... ..... ℥iij
Antipyrin..... ℥jss
Elix. aletris comp.....q.s. ad ℥iij

M. Sig.—℥j in water every few hours until relieved. Or:

Ext. cannabis indica..... j to ij gr.
Phenacetin..... xx gr.

M. Sig.—Div. in cap vj, one every two or three hours until effect.

Specific for Rheumatism.

Layne (*Cincinnati Lancet Clinic*, January 18, 1902), after trying salol, calchicum, iodides, salicylates, etc., for chronic rheumatism and its congeners, myalgia and sciatica, devised the following prescription, which he has found to be a specific:

℞ Extr. xanthoxylini..... fl℥j–ij
Extr. asclepiadis cornuti.....
Extr. solani dulcamaræ..... *aa* fl℥ss
Extr. tar axaci densleonis..... fl℥ij
Spir. frumenti.....q.s. ad. ℥viij

M. Sig.—℥iv t.i.d. after meals.

Copper as a Nervine.

Butler (*Journal American Medical Association*, January 28, 1902), in an article on "Neglected but Valuable Therapeutic Measures," refers to copper as an alternative nervine. By French therapeutists it is used in all adynamic states. Among the combinations particularly useful are copper arsenite and copper phosphate.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of January 2, 1902; Dr. Given Campbell, Jr., President, in the Chair.

Dr. L. RASSIEUR read a paper (see page 269, this issue) on the

Connell Suture.

He also presented a specimen of an

Embolus.

This is a specimen of obstruction of the internal carotid artery (cerebral portion). The interesting features of the specimen are: The pia mater is somewhat injected, the obstruction fills the lumen of the cerebral portion of the left internal carotid artery and the core extends for one and one half centimeters into the middle cerebral artery. The circle of Willis shows arteriosclerosis in various places, and the brain substance of the left side is softer than the right. Clinically the patient was unconscious, his right lower extremity was partially paralyzed, and the right upper was completely so, but his left side was free from paralysis.

DISCUSSION.

Dr. SHARPE said he was much interested in this demonstration of Connell's method of intestinal suturing. This specimen very beautifully illustrates the results of this fashion. Up to date we have certainly not reached the perfect intestinal suture, nor the ideal technique. Time will not permit entering into a free discussion of intestinal suturing as a whole, or this plan in particular. At first blush one may be inclined to think this is a very impractical scheme of anastomosis; one that is difficult of application. It is sufficient to say, in this regard, that Connell himself has applied it with a reasonable degree of celerity and ease. Dr. Rassieur had assured him that this particular anastomosis had been made in something like twenty minutes, which is not excessive. Another objection that will be raised is that there is no perito-

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neal covering to the suture. As a peritoneal covering of the suture line is merely employed as a an additional protective, not specifically as an agent of union, we need but to assure and persuade ourselves that it is practicable to so accurately apply the suture that the additional peritoneal covering is not necessary.

He said that Connell, in his thesis, very clearly shows that the line of drainage in his suture, or in any suture, is toward the end; that if the capillarity of a suture be noted, a current is observed from the center of the loop toward the ends. It very simply follows that in an ordinary suture where the knotting is outside of the bowel, the tendency of the drainage is along the suture tract, from within the bowel to the peritoneal cavity. To overcome this defect Connell has devised this suture and, with reasonable satisfaction to his own mind, finds that the tendency of the flow, when present, is from the peritoneal cavity toward the bowel lumen. The advantage is manifest. Undoubtedly, clever is the thought and technique evolved by Connell in tying of the last knot. Although a suitable opportunity had not been presented for trying this method he believed it presented claims for thoughtful consideration and may, after further experimentation, receive a generous indorsement from the surgical world. It may prove to be comparatively difficult to effect an anastomosis where a large section of bowel has been removed, the disparity in the two circumferences increasing the obstructions to accurate and rapid work, but he thought that even this will yield the same degree of success that has been secured by the older methods.

He asked if Dr. Bartlett could throw any light on the condition of the last suture and its adjacent territory, which it seems had been submitted to him for scrutiny. Incidentally he suggested that the line of peritonitis, referred to by Dr. Rassieur, is seen where the drainage tube was placed. He thought that this was a good exemplification of one of the effects of drainage and drainage tubes.

Dr. BARTLETT said he had made some experiments of this kind. He did not remember how many experiments had been made with this suture, but quite a number. The last stitch, which Dr. Sharpe mentioned, though he could only speak of his own experiments, required more time than the others, it being a little more complicated, but in no sense more difficult to tie, merely taking a little longer and, perhaps, twice as many motions. He did not think it hardly the place to

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give a full description of the suture, for, to those who are not familiar with it, a description would not be thoroughly understood without charts, and to those familiar with it, it would likewise be useless as they already know it.

It had taken Dr. Rassieur and him, for the gut alone, probably ten to twenty minutes. The operation occupied more time, of course, but that could be explained by the waste of time caused by poor assistants and poor anesthetists. In six or eight experiments there had been but one fatality among the dogs. He had not yet tried the suture on the human subject. Only one dog had died from general peritonitis. This was, however, from a certain accident and a more than usual difficult operation.

In the first experiment they did two excisions, although neither had ever before attempted the operation and consequently were not specially adept and took considerable time, and, perhaps, were not any too clean; it speaks in favor of the method to say that in spite of all these detrimental factors the dog recovered without a single bad effect.

The second anastomosis was excised at the expiration of sixteen days; it makes a diaphragm in that time, which is less than in any other method he had seen. At the expiration of sixteen days all the sutures but two had been passed. There was absolutely no agglutination to the other structures covered by the peritoneum.

Considering the short time necessary to introduce the suture and summing up the experience of Dr. Rassieur and himself, these points were sufficient to recommend the method to him and until further experiments, which would have to be very unfavorable, had been made, he intended to use it in the human subject in preference to any other end-to-end anastomosis.

Dr. MEISENBACH called attention to one point in end to end anastomosis, namely, the liability of the gut to form a diaphragm in large resections and thus interfere with the intestinal current. That is the great danger of any form of end-to-end suture no matter what method has been employed. It is claimed by Murphy that his button leaves less of a diaphragm than any other form of suture. Theoretically, this may be so; it has many advantages, but it is a foreign body and if extreme care is not taken to approximate the ends so as to preclude leakage, this will occur.

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He believes that the ideal form of intestinal suture has not been found. The harder it is to accomplish an object the more means there are advanced for accomplishing it. For instance, in fracture of the clavicle; there are, perhaps, more apparatuses devised to keep in position and immobilize this bone than for any other single fracture, yet none are perfect.

There is a great field for experiment in intestinal anastomosis and possibly some man will yet stumble on the right method by following the lines of Nature in attempting to block out the offending parts by agglutination.

Dr. WITHERSPOON thought, on close examination of the specimen, that the mucous membrane seemed to be not well coapted. The application of this suture is unquestionably easy and rapid. He had tried it, not on the living subject but on the dead gut and found that he could work very rapidly. The stitch when done as Connell indicates is commenced first at the mesenteric attachment, then the inner third and the outer third or the middle third last. This makes the application about as quick as any of which the speaker knew. However, in this specimen the mucous membrane seems to stand apart and the whole result will depend upon this determining future stricture. In a case of this kind where the separation is great and the subject is tuberculous or syphilitic there will be a tendency to stricture of the gut, and while there might be no diaphragm now, it would perhaps occur later on from masked ulceration. Yet, he thought this suture the best he had ever seen or attempted to apply.

Dr. BLAIR thought the sutures seemed well covered by peritoneum though, of course, there was no row of outside sutures. It took quite a pull in both directions to expose the thread, and the elasticity of the intestines had brought the ends in such coaptation that there was fully a sixteenth of an inch coapted beyond the suture, and it had the advantage of having been so coapted without being in any way injured by trauma.

Dr. SHARPE said that Dr. Blair's criticism was, at least in part, correct. He had used the phrase "peritoneal covering" in the light of older methods of suturing where the final tier was employed to cover in the previous suture lines. It is generally conceded that this final tier has no tensile strength, purely serving as a protective. In this sense the Connell suture is without "peritoneal covering" He sug-

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gested that his previous remarks that "we need but to assure ourselves that it is practicable to apply the suture so accurately that the additional peritoneal covering is not necessary," was sufficiently obvious.

Dr. RASSIEUR, in closing, said that none of the sutures were exposed in the peritoneal cavity, hence there could be no drainage, or at least with difficulty. In regard to the advisability of draining the cavity generally, he said the individuals who come to the hospital are usually in such a condition—often with their intestines hanging out of the belly, it was surprising that peritonitis was not more often seen than it is.

In regard to the last stitch, he said Dr. Nietert had devised a last stitch which is quite ingenious and somewhat better than the Connell stitch. Dr. Nietert does not use the needle but allows the three last sutures to overlap one another, and instead of tying, he allows them to fall over in the same way with this suture and with the highest arch ties the suture, consequently, they are all tied, then he pushes the gut over and ties, then cuts them and pushes over and ties, and the whole thing is nicely coapted.

The speaker had tried this method of suturing in three cases, one of which—a case of gunshot wound, is living. In another case of gunshot wound through the jejunum and the mesentery the suture was applied but the patient died four hours after the operation.

A series of experiments were made by Dr. A. J. Benjamin similar to those made by Dr. Bartlett and himself, also with the Murphy button, the Lembert and other forms of suturings, but he prefers the Connell suture. He says there is less peritonitis following and it can be applied more rapidly than any other.

In regard to the diaphragm mentioned, this specimen has been in formalin, and this diaphragm in proportion to the lumen of the intestines, is magnified. When removed from the cavity, post-morten, it did not present this appearance; the lumen was very well maintained.

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Meeting of January 16, 1902; Dr. Given Campbell, Jr., President, in the Chair.

Dr. ROBT. LEUDEKING read a paper (see page 241, this issue) on

Antistrepticoccus Serum.

He also reported a case (see page 267, this issue) of

Perforated Meckel's Diverticulum.

and presented specimen.

DISCUSSION.

Dr. TAUSSIG said he was sorry that he had but a limited experience with antistreptococcic serum. It had seemed to him on the few occasions he had used it that the serum had a depressing influence on the heart; however, it would be difficult to say whether this was due to the serum or to the toxins developed. He asked Dr. Leudeking if he had noticed such action following the use of the serum.

Dr NIETERT said he had recently tried the serum in ten cases of erysipelas at the City Hospital, and although he could not report a decided effect, it did seem that the disease was cut short by the use of the serum. If used early, he thought it beneficial in erysipelas.

A case of perforation of Meckel's diverticulum came under his observation recently at the Hospital. The case was that of a little girl with general peritonitis when admitted. She was placed on the operating table and the abdomen opened, when a loop of intestine was found lying below the diverticulum, about two and a half inches long and bound down by adhesions. The part of the bowel which passed through the loop was not gangrenous and the circulation had not been cut off, but the circulation in the diverticulum was cut off and it had become gangrenous; it was removed and the twisted condition of the bowel relieved, but the child was in such a bad condition from shock that she died. He had never seen just such a case before. The adhesion at the end of the diverticulum bound it down so as to form a ring, and through this ring had passed quite a considerable portion of the ileum.

Dr. AMYX said he had used antistreptococcic serum mostly at the City Hospital. In only one case were the benefits manifest. A case of scarlatina showed good results, and a case of otitis media made a fair recovery. In a case of erysipelas there was no effect shown.

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Dr. BOEHM had personally experimented with the antistreptococcic serum in about twenty cases, some at the Hospital and some in private practice. Last spring one of the students of Marion Sims College became infected in the dissecting room and consulted the speaker. Dr. Born was called in consultation and it was decided to give antistreptococcic serum. The temperature was under 104°F. before the serum was administered. The evening after the first injection the temperature was 105°F. and the circulation seemed affected; whether this was due to the high temperature or to the serum he could not positively determine. The following morning another injection was given; an abscess made its appearance which was incised and from the pus smear preparations were made and also cultures. It was then found to contain pure staphylococci. The serum injections were then discontinued, the temperature dropped and the patient got well under the use of quinine, arsenic, etc.

In a rather unusual case of erysipelas the serum was tried. The temperature in this case had risen as high as 107.2°F. in forty eight hours, never dropping below 106°F. The patient was a middle-aged woman; she received twenty-four injections of the antistreptococcic serum and a fatal prognosis was given, but much to his surprise the patient recovered, due, probably, to the use of the serum.

He had seen two cases of infection following criminal abortion. In one case the median basilic vein was incised and the blood examination showed staphylococci, and the patient died the next day.

He believed that a great many of the poor results reported from the use of the serum were due to its being used in cases of staphylococcic infection instead of streptococcic. In private practice it is not always practicable to make a blood examination, but this ought to be done whenever there are unfavorable results from the use of the serum. He had recently heard of its being used in a case of lobar pneumonia. The physician thought it did some good.

Dr GRADWOHL said he thought the reason why the success of antistreptococcic serum was not as uniform as with the diphtheria antitoxin was largely due to the manner of manufacture. Mamorek used an attenuated streptococcus mixed with sterilized horse serum—in other words, simply injected an attenuated culture. Petrusky's results with the same serum Mamorek used were absolutely negative. Dr. Luedeking had explained this very well by the fact that Petrusky had worked with a streptococcus entirely different from Mamorek's

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He had experimented with it in only one case with which Dr. Leudeking had been associated. It was a case of erysipelas in his own family and the results were entirely negative. But two injections were given and there being no amelioration of the symptoms the serum was discontinued. He thought Dr. Luedeking was correct in attributing the unfavorable results obtained to one variety of antistreptococcic serum used when there are so many varieties of different degrees of virulence.

Dr. CAMPBELL said the fact that antistreptococcic serum does have a beneficial effect seems undoubted. In looking over the tem perature chart of this case the fact that the serum must have been the beneficial agent can hardly be escaped. He thought it important to notice carefully the effect in cases of erysipelas. In this disease we have usually a pure infection with a streptococcus of a rather definite family. The action of this remedy in erysipelas, taking into consideration its early employment, dosage, etc., should be carefully studied and should indicate what the future has in store for a perfected antistreptococcic serum.

He asked if there was any special danger of local abscess after the injection of the serum. He had seen it stated that, even with due care, there was some unpreventable danger of abscesses.

Dr. SHARPE said he had had, a few years ago, the pleasure of presenting before the Society a résumé of the literature up to date, covering the therapeutic effects of antistreptococcic serum, added the notes of a few surgical cases to the general record and drew a few deductions. As he recalled, his remarks were rather conservative; and though its standing was yet unsettled he considered it an agent worthy of trial in selected cases, and advised its early use, and, when necessary, in repeated dosage. At present he was not prepared to change his views as then stated.

Dr Taussig had mentioned something that merits attention and that was a consequent cardiac depression participating in the general picture of a beginning septic condition; and instead of producing further depression, following the use of the serum, the contrary was obtained. The heart seemed to be noticeably stimulated, the pulse and respiration subsided, becoming notably stronger and better in tone and the dry skin became moist. The effect in the cases to which he referred lasted approximately thirty-six hours, after which time the

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temperature again rose with the respiration and pulse in accord. A repetition of the injection would bring these down again and the policy he followed and still employs was to inject and re-inject until the process was held under control. The place of the infectious process in both cases was obscure, the streptococcus group was, however, isolated and the outcome was satisfactory.

He felt now as he did then that the serum had a distinct field of usefulness and should be used in selected cases; it should be administered in the early stages of the infectious process and be repeated as frequently as may be indicated.

Dr. BLAIR said Meckel's diverticulum is supposed to arise from the intestine at a point opposite the termination of the superior mesenteric artery. On examining the specimen he found a cut in the mesentery, approximately five inches long; in that cut edge there were several cut arteries of about the normal size of a vasa intestini tenuis, but just opposite the origin of the diverticulum is a very large artery accompanied by a vein which he took to be the ending of the superior mesenteric artery with the commencing of the superior mesenteric vein. This bears out the supposition that this is Meckel's diverticulum

Dr. ORR said there was a dental student at the Hospital some years ago with a very interesting case of pneumonia. The case had been seen by Dr. Fischel, Dr. Baumgarten and others connected with the college; the case was pronounced a streptococcic pneumonia and the bacteriological examination made confirmed the diagnosis. The most striking symptoms were frightful hemorrhages accompanied with high temperature, severe pain and ceaseless coughing; he was intensely ill. It was suggested that antistreptococcic serum be given, but how many injections were made he could not remember. The patient made a good recovery but he could not recall accurately the facts and could not say that the good recovery was due to the serum used or simply a coincident crisis in the disease.

Dr. NIETERT mentioned a case of puerperal infection, a mixed infection of both staphylococcus and streptococcus. The patient died after they had used thirty bottles of antistreptococcic serum. On post-mortem they found abscesses throughout the body and all the signs of pyemia. An examination of the flow from the uterus showed a mixed infection. This case demonstrated to him the inefficiency of the serum in mixed infections.

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Dr. LUEDEKING, in closing, said that depression was not unusual. He believed it was due, in those cases where it is met with, to the effect of the *foreign* serum, not to antibodies; he did not think these bodies circulating in the blood had such an effect, but attributed the depressing effects rather to the introduction of the *foreign* serum. It must be used in quite large bulk, as much as 20 cc We know these depressing effects were particularly observed in the early days of diphtheria antitoxin and for this same reason

The case cited by Dr. Gradwohl was of such a character. In that case he would have been glad to try another injection, but the condition of the patient was such that he was very glad to have had plenty of whisky and strychnin on hand. As stated in the paper, we should look for individual idiosyncracies, and he thought this patient was such a person. If there is anything there is usually a stimulating effect, as Dr. Sharpe has pointed out.

As to whether previous injections are advisable in a case of going to a surgical procedure, he had no knowledge that such a thing had been practiced. He had read of the possibility of its being practiced but did not know of such an instance.

The streptococcus does circulate in the blood. The invasion is perfected after it reaches the circulation and in that wise it is distributed throughout the entire organism and the poisonous effect is owing to the toxin of the streptococcus. After it is dead it may also exert an influence through the breaking up of its body.

ALUMNI ASSOCIATION OF THE MEDICAL DEPARTMENT, WASHINGTON UNIVERSITY.

Meeting of January 9, 1902; Dr. L. H. Behrens, President, in the Chair.

Symposium on Syphilis.

(See page 174, March issue).

DISCUSSION.

Dr. CAMPBELL emphasized the syphilitic headache as an early sign of syphilis. A headache attacking an individual previously not subject to headache and so severe that it is not relieved by ordinary

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analgesics, that lasts for several days up to several weeks or months, that has exacerbations, usually worse at night, and keeps the patient awake, such a headache should always cause the physician to suspect syphilis. A further sign in many cases is the condition of the pupil: very often in connection with the headache there is a sluggish pupil or its reaction to light is absent, though it reacts readily to accommodation. It is rare that a patient will develop serious vascular lesions or a severe meningitis without this characteristic headache, and if treatment is instituted at this time we can prevent these later complications. The characteristics of a specific vascular disease are those of thrombosis. If the patient has a paresthesia and tingling in the limb, which is subsequently paralysed, it speaks strongly in favor of a specific disease. If the paralysis is due to a hemorrhage there will probably be prodromata but they will be generalized and not local in the limb affected. The prognosis depends considerably upon the length of time that has elapsed since the initial lesion.

Dr. HINCHEY understood the necessity of probibiting smoking when lesions of the mucous membrane existed, but saw no reason why it should be interdicted during the entire period. The rule to insist that the patient do not marry is impracticable. In the way of prophylaxis he recommended that all children at the proper age should be taught the evil effects of syphilis.

Dr. TAUSSIG called special attention to the syphilitic fever; he did not refer to the fever which comes later in the disease and which is often very puzzling to the physician; we often find this fever with tertiary manifestations of the disease. Occasionally, however, the situation is not so clear and after a careful search nothing is found to account for the fever; such a fever often closely simulates the fever of latent tuberculosis, and often a progressive emaciation is accompanied with an irregular elevation of temperature which is almost impossible to distinguish from latent tuberculosis. Antisyphilitic treatment is one way to distinguish betwen them and the use of tuberculin is another way. Janeway reported a number of interesting cases of such fever in children, the sort of fever formerly universally considered tubercular fever. In these cases, however, the fever was due to syphilis and yielded to antisyphilitic treatment. In such cases the diagnosis could have been more easily made and very much earlier if tuberculin had been used before instituting antisyphilitic treatment.

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Dr. EHRENFEST, speaking of the importance of syphilis in gynecological practice, said one of the places where the chancre is found is on the cervix; this primary chancre is often mistaken for a cancer and there are a few cases on record in which the uterus had been extirpated on account of this primary chancre on the cervix. In a large percentage of cases of syphilis in women the location of the primary sore is impossible to find and even a close examination will not reveal the point. On the other hand, in obstetrical practice, cases are seen showing a peculiar rigidity of the cervix in syphilitics, and some writers have tried to prove from this that the primary sore was on the uterus.

Dr. LIPPE referred to the anemic condition as is sometimes found in children of 2 or 3 years of age, or even up to puberty, without any demonstrable disease—without tubercular history or history of a previous severe illness, having never developed or manifested any sphilitic lesion, who, when placed on antisyphilitic in tonic doses, improve to an remarkable degree.

Dr. TUTTLE said that while inherited syphilis is less common in the United States than in England and France, it was far from infrequent. He believed that syphilitics were more thoroughly treated nere, and fewer syphilitic infants were born. Occasionally children will develop syphilis later in life, having passed early infancy without symptoms.

Dr. GREEN, Jr., said that he had recently read a paper in which was mentioned a series of cases of joint affections in children ranging in age from 2 years to puberty; the joint affected in the majority of cases was the knee-joint. The children were bedridden and the dis ease, as far as the joints were concerned, failed to yield to any rheumatic remedies. Finally, ocular troubles manifested themselves, which were found to be typical interstitial keratitis. The joint affection proved amenable to antisyphilitic treatment which was instituted for the ocular lesions.

Dr. JONAS recalled the trio of symptoms—deformity of the teeth, deafness and interstitial keratitis, which is so characteristic of hereditary syphilis. In women syphilis is often obscure; this is true when infected from the spermatozoa of the male.

Mah may generate healthy spermatozoa after being thoroughly treated, since they are only recently formed. But in women the ova are all formed during the period of development; hence, a woman

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having syphilis will have all follicles infected and will, consequently, not be able to give birth to a healthy child for a long time.

Dr. HARDAWAY, in closing, said the fact is often overlooked that though the disease may be weakened by time and the patient beget healthy children, he may be attacked and become a cripple, disabled or even die. He mentioned a case illustrating this.

Infants without apparent syphilis when born will manifest signs of it in the hands—the palms, etc., but these children have a relatively slight erythematous syphilide and by the time a physician sees them it has disappeared.

Dr. Tuttle may be right in his remarks about the comparative infrequency of inherited syphilis in this country. The speaker has no doubt whatever that the greater frequency of this disease in England was due to the false teaching—the criminal teaching. In a recent article this question was discussed, and the writer said there were doubtless many cases where men were fit to marry after an interval of six months, but even if children are born with syphilis, it is easly cured!

Banquet to Dr. E. H. Gregory.—Under the auspices of the St. Louis Medical Society, the medical profession of St. Louis will give a testimonial banquet to Dr. E. H. Gregory who for fifty years has been an active teacher of medicine, probably longer than any other man living. The banquet will be held at the Planters' Hotel, April 17th and will doubtless be one of the largest and most impressive affairs of the kind ever held. A large number of guests will be invited, including all the ex-presidents of the American Medical Association, out of compliment to Dr. Gregory, who was President of the Association in 1887. A committee, composed of Drs. F. J. Lutz, N. B. Carson, J. P. Bryson, C. H. Hughes, W. B. Outten and H. W. Loeb, has the matter in charge. The committee on invitation is unique in that it is composed of one member of every class taught by Dr. Gregory, fifty in all.

"Medical Bulletin of Washington University."—The first number of this journal has just appeared. It will be issued quarterly by the College and will be free to the alumni. This number has a fine appearance and contains several important original articles.

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REPORTS ON PROGRESS.

MEDICINE.

In Charge of W. M. Hoge, M.D.

Hepatic Syphilis.

Simon Flexner (*New York Medical Journal*, January 18, 1902) says that in more than 5,000 autopsies at the Philadelphia Hospital, 88 cases of hepatic syphilis were encountered. In about half of this number interstitial hepatitis was the form of disease observed; the gummatous form was met with in 23 cases, perihepatitis in 16 and amyloid disease in 7. Gummata yield most readily to specific treatment, but even in interstitial hepatitis and amyloid disease better results are often obtained than the nature of the pathological changes would lead us to expect.

Etiology of Cirrhosis of the Liver.

James K. Cook (*Medical News*, February 8, 1902) says that the habitual drinking of alcoholic liquors, especially spirits, ranks first in the causes of venous or atrophic cirrhosis. Syphilis, malaria, typhoid fever and other infectious diseases may produce it, as also overeating, especially of highly-spiced foods. It has also been observed to result from certain mineral poisons—antimony, lead, arsenic, phosphorus and copper. Cases have been observed to follow acute yellow atrophy which were not rapidly fatal.

The etiological factors of the hypertrophic cirrhosis of Hanot seem to be similar to those of the atrophic form. Biliary cirrhosis is apparently due to some infection extending upward through the biliary system. Alcoholism is in some cases associated, but in many others absent.

Treatment of Alcoholic Cirrhosis of the Liver.

George M. Converse (*Ibid*): Aside from such surgical and symptomatic treatment as may be indicated, the point of prime importance are, complete withdrawal of alcoholics and the prescription of an early

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assimilable and non-irritating diet. The patient should first be placed upon an absolute milk diet, of which three or four liters should be taken daily. This should be continued until the gastro-intestinal symptoms and congestion of the liver, that are frequently present, have subsided. In early and simple cases a week or two may suffice; in more advanced cases it should be continued for from two to four months; then gradually eggs, vegetables and, lastly, meats are allowed. At the beginning of treatment a purgative is given and afterwards, at intervals, mild laxatives. Rest, open-air exercise and moderate hydrotherapy are valuable adjuvants.

Treatment of Lobar Pneumonia.

Charles E. Nammack (*N. Y. Medical Journal*, February 15, 1902) says despite recent advances (?) in the treatment, pneumonia continues to exact its quota of 30 per cent of deaths in hospital practice; the results in private practice are much better, because better environment and facilities are usually obtained. The longer one treats pneumonia the more one feels that every case is a law unto itself. Patients may be divided into three groups: Those whose infection is so mild that they require only good care and not drugs; cases so malignant and toxemia so overwhelming that all measures will fail to cure them, and a third group which is capable of cure under careful and watchful therapy.

The objects of treatment are to eliminate poisoning and to sustain the heart and the patient. Since the lungs, and usually the kidneys, are seriously crippled by the disease, our available avenues of elimination are the bowels and skin. Calomel and soda, followed by saline laxatives and repeated judiciously during the progress of the disease will attend to the gastro-intestinal system. The skin may be acted on by water—cold, tepid or hot, according to the special indications and the stage of the disease. The peripheral circulation and resistance are kept up by vasomotor stimulants—strychnin, alcohol and nitroglycerin.

When there is a tendency to right-heart failure, or when the pneumonia is complicated by acute nephritis, venesection, with saline infusion will accomplish much good. Without preliminary venesection it is never safe to make any considerable addition to the fluids of the fluids of the body during the acme of the disease.

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NEUROLOGY.

In Charge of M. A. BLISS, M.D.

The Therapeutic Value of Hypnotism.

Chas. W. Burr (*American Medicine*, January 4, 1902) contributes a well-balanced article on this subject. He discusses the influence of this force in the alleviation of suffering, its limitations and its dangers. He states that the number of susceptible people is small. In organic diseases, hypnotism is practically of no therapeutic value. In functional diseases, suggestion proves most largely useful, but suggestion without the more flamboyant features of hypnotism. Dr. Burr emphasizes the harm which may be done by hypnosis in weakening the will. Continued hypnotism injures the young, but suggestion is the tool of every wise school-master.

Effects of Alcohol on the Mental Powers.

The *Quarterly Journal of Inebriety*, January, 1902, quotes the experiments of Dr. Wlassak, of Vienna, upon young people in excellent health, in giving them small fixed doses of alcoholic beverages and watching the effect on their mental powers; observing the effect on the speed and quality of simple and calculable operations, such as sums in addition, committing figures to memory, and noting impressions on the senses. An appreciable decline in the power of addition was produced by a quantity of alcohol equivalent to a fifth of a liter of beer. There was a marked and rapid decline on the consumption of two to three liters of beer when a certain number of figuers had to be added in a given time. The injurious effects of such a quantity was noticeable for over twenty-four hours. The other tests gave similar results, when alcohol was taken daily a cumulative effect was produced. The persons experimented upon had no consciousness of their diminished capacity, but, on the contrary, believed they were working easily and well. The circumstance that alcohol thus falsified facts was taken by Dr. Wlassak to constitute its greatest danger. While actually diminishing the capacity for intellectual labor, it produces a feeling of satisfaction with the inferior work accomplished under its influence. Thus is the important fact established on scientific evidence of the most incontrovertible order that it acts as a

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hindrance to culture, even in cases where there is no approach to intemperance.

Treatment of Acromegaly with Pituitary Bodies.

Sidney Kuh (*Journal American Medical Association*, February 1, 1902) discusses the influence of the affections of the pituitary growth, and concludes the findings warrant the belief that there is an undoubted connection between tumors and other affections of the hypophysis and nutritional changes mentioned. He reports three cases of acromegaly in which feeding with pituitary bodies was tried. In two there seemed to be a decided improvement which could be differentiated from the influence of suggestion. In the third no benefit was derived. Kuh concludes: "It is hardly reasonable to expect the treatment to cause those symptoms to disappear which are due to organic changes in the tissues, such as optic atrophy, or enlargements of the peripheral parts, but the subjective symptoms were relieved, both in two of my own cases, and in quite a number of those recorded in literature." Quite a complete bibliography is appended to the article.

Needless Public Expense in Caring for the Insane.

H. W. Coe (*The Medicus*, December, 1901) calls attention to the overcrowded condition of all the State asylums for the insane in this country and to the further fact that in practically none are there sufficient physicians, attendants, and nurses to care properly for the great number of inmates.

Dr. Coe says the people have been educated to look upon mental illness as something essentially different from physical illness and have come to regard their responsibility accordingly.

Those who would not think of making members of their family sick with typhoid or other illness a care to the State, immediately seek aid in event of insanity occurring. Several instances are cited where patients themselves had adundant means to provide for their care in private hands, yet became public charges, their estates after death going to distant relatives, living out of the State. Dr. Coe thinks the fault lies largely with the county judges who commit, the asylum authorities have no option about admission, and small latitude in dismissing. In some cases, however, the medical officer is at fault in retaining patients when the relatives would willingly assume the burden of their care.

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Should all patients now in the asylums, whose relatives, or whose estates might provide private care were removed, much better apportunity would be afforded for the cure of those remaining, and the State would be able to maintain a larger force of physicians and nurses.

And those removed would do better under skilled private care, where less crowding or entire freedom of contact with other insane patients would have a salutary effect. Dr. Coe believes that the State should enter into competition with private institutions by adopting the cottage system and caring for patients able to pay for a sum smaller than usually demanded by such institutions, but making the expense to fall where it falls in other kinds of illness, and where it belongs, on the estate of the patient, or his family.

There will still be left such a large number of indigent insane that the present capacity of the State asylums will be fully taxed.

OTOLOGY AND RHINOLOGY.

In Charge of LEO. CAPLAN, M.D.

Relation of the Middle Turbinate Body to Chronic Diseases.

Charles H. Baker (*Philadelphia Medical Journal*, December 28, 1901) justly remarks that the inferior turbinate has too often been made the scapegoat in chronic nasal disorders. While it is true that in the majority of cases the inferior turbinate is found to be in a state of hypertrophy, and producing nasal stenosis; yet there are a number of nasal disorders which are out of the sphere of influence of the inferior turbinate, and when we consider the anatomical structure of the nose, we will find that the middle turbinate exercises a greater influence on the course and progress of such disorders than the inferior. The middle turbinate stands in closest relation to the various accessory sinuses and to the most sensitive portion of the septum. The accessory sinuses are slow in becoming involved in inflammations of the nasal cavity, but they are also slow in recovering, on account of the occlusion of their meatus by the swollen middle turbinate. On the other side the middle turbinate is kept in a condition of irritation by the pathologic secretions from the sinuses. With the occlusion of the outlets of the accessory sinuses of the upper nasal meatus, acute inflammation soon goes over into the chronic state, and the condition can not be permanently cured, without a total or partial removal of

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the middle turbinate; hence, the writer points out the following indications for the removal of the middle turbinate:

1. Formation of polypus and polypoid degeneration. As the middle turbinate has to stand the brunt of the irritation caused by a constant flow of a creamy pus from the upper meatus and accessory sinuses, it is often the seat of polypi. No amount of snaring, curetting, or cauterizing will cure the case until the middle turbinate is removed, in whole or in part.

2. Irritation and swelling of the mucous membrane of the middle turbinate without polypoid degeneration.

3. Formation of fetid crusts of non-specific character in the upper meatus, or in the nasopharynx.

4. In cases of "bullous" hypertrophy, which in reality is not a true hypertrophy of the bone, but only a ballooning out of the cells, while the mucous membrane is atrophic, as is the rest of the nasal structures.

4. In cases of nervous disorders and vasomotor rhinitis; as severe sneezing, coughing, nasal asthma, hydrorrhea, headache, nervous eye reflexes, vertigo, tinnitis, and even chorea and epilepsy, all of which can be caused by pressure of the middle turbinate on the sensitive portion of the septum.

Treatment of Tuberculosis of the Larynx.

C. P. Grayson (*Brooklyn Medical Journal*, November, 1901), in a discussion on this subject, gives his personal experience of the method of combating this dreadful disease. First of all he applies a 50 per cent lactic acid solution, once, and, if possible, even three times a day. To liquify the secretion and facilitate expectoration, he make an intratracheal injection of menthol, guaiacol or eucalyptol in olive or some other oil; and to alleviate the laryngeal pain, he touches the ulcerations with a solution of 15 grains of orthoform to one ounce of "basol" (a new oil introduced by a Philadelphia chemist, which keeps orthoform in a perfect solution). This method of treatment, together with a perfect hygienic and climatic surroundings as possible, and with total abstinence from using the voice even in a whisper, will in most cases accelerate cicatrization. Surgical interference, like curetting, sometimes with previous incision of the infiltration, he rejects as harmful.

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Lucae's Probe.

A novel and simple process of rendering the massage of the tympanum with Lucae's probe less painful was introduced and described by Charles J. Koenig (*Arch. Internation. de Laryngology, d'Otologie, et de Rhinologie*, September–October, 1901). Every one familiar with the use of this instrument knows how painful its contact with and pressure upon *processus brevis* is. Even if a complete anesthesia of the drum with cocain, phenic acid, and menthol, recommended by Bonain, were possible, the cocain could not penetrate deep enough to render the ossicles insensitive. In using Grey's cocain solution, which contains anilin, it is questionable whether this latter ingredient does not render the action of cocain necrotizing on the membrane. But aside from the pain, the application of the probe may cause excoriation of the epithelium and an infectious myringitis, or more serious complications may ensue. The writer saw in one case an acute myringitis, and in another a vesicle filled with sero-sanguinolent liquid, as a result of this application.

To obviate these dangers and inconveniences, the writer plunges the end of Lucae's probe, which contains a cup-like excavation to receive the *proc. brevis*, into molten paraffin; in withdrawing the probe the parafin a pearl of the latter remains in the cup of the probe; he allows it to cool off sufficiently and brings it into contact with the *proc. brevis*. The paraffin being soft, the *proc. brevis* imbedes itself into it, and while the contact is very intimate, it does not cause pain to speak of. He says that patients who have been previously treated with the unprotected probe, have been agreeably surprised at the difference from the protected probe. He warns not to use in the beginning more than two or three movements forward and backward, and not more than 60 grams pressure. The latest Lucae's probe has an arrangement which permits the increase of the pressure to 100 grams.

PEDIATRICS.

In Charge of M. J. LIPPE, M.D.

Symptomatology of Cretinism and Other Forms of Idiocy.

Koplik and Lichtenstein (*Archives of Pediatrics*, February, 1902) describe a stigma of degeneration found in all cretins examined by

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them, and also some cases of idiocy, microcephalic idiots, and children who were congenitally deficient. This stigma is described as a prominence in the region of the antithenar eminence and over the os pisiformis. This prominence is apparently an over-development or hypertrophy of the small muscles of the inner border of the hand, attached to the pisiform bone, as well as perhaps an enlarged condition of the bone itself.

Multiple Arthritis.

Acker (*Ibid.*) reports the case of a colored child, aged 2 years, suffering from a vaginal discharge containing numerous gonococci, who developed swollen knees and ankles during the third week of the disease. The treatment was sodium salicylate, five grains every hour, douches of saturated solution of boric acid, and wrapping the joints in cotton, after applying 25 per cent icthyol ointment Recovery took place with in a month, with good motion in the joints.

Cough in Influenza Simulating Whooping-Cough.

Friedlander (*Ibid.*), making a blood count in a case of so called pertussoid, or pseudo pertussis, following an attack of typical inflenza, found changes analagous to those found in pertussis, *i.e.*, a leucocytosis and a relative lymphocytosis. The differential count showed: Small lymphocytes, 53.35 per cent; large lymphocytes, 16.10 per cent; polymorphonuclears, 30.09; eosoniphiles, 0 19 per cent.

General Subcutaneous Emphysema Complicating Pneumonia.

Pierson and Carr (*Ibid.*) report such a case in a child 4½ years old. The history is as follows: No previous illness, except measles when 3½ years old. The family history was good, except that the maternal grandmother died of phthisis. Present illness began January 29, 1901, with an acute pneumonia of right lung, involving lower and middle lobes. The left lung became inflamed soon after the right, and the process extended almost to the apex. The general course of the disease was satisfactory, the right lung undergoing resolution, when, after a coughing attack on February 11, there was noticed a swelling on the right side of the neck and face. The swelling increased until it involved all the neck, trunk, and upper extremities. Percussion over the body gave a tympanitic sound, and the pressure of the hand produced a crackling. During an attack of coughing, the

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tension of the emphysema, especially in the neck, was much increased. The emphysema remained at its height for about five days, during which the lungs cleared up. The swelling gradually decreased during the next three weeks, and the boy was well one month after the onset of the emphysema.

Eye Defects in Children.

Bull (*Ibid.*) calls attention to a very common and oftentimes overlooked cause of apparent mental dulness and deficiency, namely, anomalies of refraction. In their order of frequency, first comes hypermetropia, next astigmatism, then myopia.

Hygiene of the Mouth.

Goldsmith (*Ibid.*) advises that the cavities in children's teeth should be filled as soon as they appear, for the following reasons: To prevent pain; to preserve a proper masticating surface; to secure retention of the temporary teeth until the proper time for their exfoliation and bring about a proper development of jaw bone, so that when the permanent teeth appear they will have sufficient room to erupt in their proper positions, and the child thus will have a regular arch.

Protargol to Prevent Ophthalmia of the New-Born.

Piotrowski (*Centralb. f. Gynaekol.*) recommends protargol as the best preventive of suppurative inflammation of the eyes of the new-born infant. After cleansing the eyelids with a 3 per cent solution of boric acid, a 10 per cent protargol should be applied, especially to the conjunctival sac, being dropped from a glass dropper. In a series of 1030 cases thus treated, there was not one instance of blenorrhea, and only 1.2 per cent of cases of secondary catarrh. A stronger solution increased the percentage of secondary catarrh.—*Archives of Pediatrics.*

Fluctuations of Temperature in Pulmonary Tuberculosis.

Adams (*New York Medical Journal*, December, 1901) reports a number of cases of tuberculosis, with temperature charts showing marked fluctuation in the terminal stage of this disease. He also calls attention to the apparent harmlessness of these variations; the temperature may reach 108°F., and in a few hours drop to 95°F., without anp apparent effect upon the child, either mentally or physically. The absence of the usual phenomena of hyperpyrexia or of

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collapse, can only be explained upon the assumption that some irritant acts upon the heat centers differently from that present in purely septic conditions.

SURGERY.

In Charge of

A. V. L. BROKAW, M.D., and E. C. GRIM, M.D.

The X-Ray in So-called Sprains.

G. G. Rose, of Philadelphia, and M. I. Wilhert, Radiographer (*American Medicine*, January 25, 1902), call attention to the frequency of fractures of the small bones and the larger ones near the joint. Twenty sketches, taken from x-ray pictures are introduced, illustrating various injuries of this kind, that have been diagnosed sprains.

They mention the vagueness of the pathology before the use of the x-ray, hence the treatment has been unsatisfactory, and the results are far out of proportion to the apparent injury. In fractures it is an accepted fact that the better the reduction and therefore the apposition of the fractured ends, the less callus is manufactured, and the stronger is the resulting union. This fact is applicable to the class of fractures under consideration, for while the bony tissue involved may be small, and the area insignificant, still in or near the joint makes an excess of callus a most important deterring factor to the subsequent restoration of function, and a discontinuance of pain. A fracture of any character, properly reduced and dressed, rapidly becomes comfortable and remains so. If pain continues after dressing, it usually indicates that the fracture is not properly reduced.

The following are some of the injuries: Fracture near the base of the phalanges, due to direct violence, are common. Similar injuries of the metacarpal bones from same cause are often found. They are frequently caused by blows with the closed fist. Of all joints the wrist is most frequently affected and the clinical signs for positive diagnosis are most often absent. The injury may be a fracture of any of the carpal bones or the separation of either styloid process. In the so-called sprained shoulder, the acromial end of the clavicle or the acromion may be fractured. The ankle and foot often suffer from these injuries. The tip of the fibula may be pulled off by a turning

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of the ankle, or jumping a distance on a hard surface, may fracture any of the bones of the tarsus.

In many of these conditions the only means of making out the true condition is by the x-ray.

The Question of Drainage in Appendicitis with Outlying Peritoneal Infectiou.

Westbrook (*Brooklyn Medical Journal*, February, 1902) discusses the question of abdominal drainage, and quotes Drs. Clark, Kelley and Morris, whose practice differs from his own. They have almost entirely discarded drainage, even in pus cases. This method is based on the facts, that the peritonum has such a high power of absorption, and especially the portion over the diaphragm, and that it can dispose of a large amount of infective or solid matter. Clark, therefore, advised thorough irrigation of the abdominal cavity after operation, and the leaving of 500 to 1,000 c.c, of normal salt solution in the abdomen when the presence of septic matter was suspected, thus providing for ready absorption. The incision should be complete, and the foot of the patient's bed elevated eighteen inches for 24 hours to facilitate absorption at the diaphragm. The employment of drainage, Clark states, would disturb the normal currents of the peritoneum, and cause adhesions within a few hours, thus cutting off the general peritoneum from all participation in the work of absorption. And capillary drainage by gauze or wicks he considers a delusion, removing the fluids from a small area for about two hours only, then becoming clogged and acting as a plug.

While Clark and Kelley report most excellent results from their methods, it must be noted that the cases operated upon were either clean cases or cases of pelvic suppuration in a quiescent state.

Dr. Morris, of New York, is a strong advocate of closed wounds. He breaks up adhesions, flushes out with peroxid of hydrogen, and washes this away with saline solution, but does not flush out the cavity with the latter.

Dr. Westbrook's method is to leave all adhesions, sponge out pus, place a small drain in pus cavity and close the wound; the lower angle being left open for the drain, which is removed in four or five days. The author gives very logical arguments in support of his method, and we regret we have not space enough for them, but will add his summary:

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1. There are as yet no well-recognized formulæ to guide the surgeon as to when to omit drainage in purulent collection attending appendicitis.

2. While it is true that the peritoneum may be relied upon to take care of certain quantity of infectious material, we have no means of estimating in any individual case what the quantity may be. It is contrary to experience to expect the peritoneum to care for any large quantity of infection, otherwise we would never have to operate at all for appendicitis, or septic peritonitis.

3. An estimate of the individual's resistive powers to infection may be approximately made by the usual methods of consideration of the condition of his heart, lungs, kidneys, etc., his pulse and temperature, his previous health and habits, and perhaps, in some instances, by means of placing over against this, at time of operation, an accurate estimate the of virulence of the infection with which the patient's resistive powers will have to contend. But we can not estimate any individual susceptibility or immunity to infection which he may possess.

4. If the surgeon decides to omit drainage in any case of appendicitis with outlying infection, he must do so, relying entirely on his personal ability to estimate the clinical facts in the case, and the nature and extent of the pathological process exposed at operation. Then, if his experience has brought him to the point of omitting drainage, he is warranted in doing so.

5. The majority of surgeons the world over still consider drainage necessary in all degrees of the class of cases under discussion, and that we must consider the safer teaching.

Intrathoracic New Growths.

Lambert (*New York Medical and Surgical Journal*, November, 1901), in surveying the subject, finds sarcomata and carcinomata greatly predominating, whether of the pleura, lungs or mediastinum. Of 112 instances of mediastinal primary tumor, but 25 are non-malignant growths. Any tumor may cause symptoms of pressure, but the malignant tumors, by their growth and extension around the various tissues and filtration of these tissues, cause a continually progressive set of sypmtoms.

In the vast majority of cases, tumors of the pleura are secondary

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to growths in some other parts of the body, and cause a blood-stained effusion resembling only that of primary tuberculous pleurisy. The presence of the tubercle bacillus or of tumor cells in the fluid is the only basis for positive differentiation. Considering the malignant tumors of the lungs, carcinoma is the form which here predominates in the ratio of 7 to 1 of sarcoma. Secondary tumors are much more common than primary ones.

Sarcomata are more common than carcinomata in the mediastinum in the ratio of 3 to 1, and primary sarcomata are about seven times more frequent than secondary, and 'primary carcinomata are about nine times as frequent as secondary. The symptoms of mediastinal tumors vary according to their position, those in the anterior mediastinum causing greater predominance of circulatory distubances, while those in the posterior mediastinum cause more symptoms of interference with respiration, compression of the lungs, interference with the esophagus and involvement of the nerves. One peculiarity of the various symptoms, which seems to be a noticable characteristic, is the spasmodic character of the occurrence of the various symptoms.

The prognosis consists in the probability of how long life will last under the circumstances, and in the majority of cases this is a matter of months rather than years.

Senator Platt's Leprosy Bill.—The salient parts of a bill introduced in the Senate are as follows: The appointment of a leprosy commission, the establishment of a leper home, the Marine Hospital service to have charge, the strict supervision of immigrants of leprous families, the injunction of transportation companies to bring a leper to this country, and the transportation of all lepers to this home.

History of the Medical Department of the U. S. A.—In the February number of the *Journal of the Association of Military Surgeons*, appears a very interesting résumé of the History of the Medical Department of the United States Army, by Lieutenant-Colonel J. V. Rensselaer Hoff. The history of this department begins with the siege of Boston in 1775. After the battle of Breed's Hill, a hospital was established at Cambridge under the celebrated Dr. John Warren. The surgeons in the army received about $40 a month. Their regulations were exceedingly simple. This article will repay reading.

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BOOK REVIEWS.

International Clinics. Vol. IV. Seventh Series. 1901. Philadelphia: J. B. Lippincott & Co.

This volume contains a number of articles of practical value on therapeutics, internal medicine, surgery, neurology, pediatrics and dermatology, by prominent American and foreign authors.

Syphilis. A Symposium. Contributions by seventeen distinguished authorities. 1902. New York: E. B. Treat & Co.

Although there is no dearth of well-written standard works on this disease, still, this small volume, as a complement to any one of them, is well worth a careful reading. In each topic that any one of the authors has discussed, we get an up-to-date opinion of a well-known authority. The series of questions answered at the close of the book, is the same set of questions that constantly present themselves to the medical man, who is ever mindful of the welfare of his patients.

Practical Medicine Series of Year Books. Vol. III. The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C.M., M.D.; Albert H. Andrews, M.D., and J. Melville Hardie, A.M. M D. Price, $1.50. Chicago: The Year Book, Publishers, 40 Dearborn Street.

This volume is one of a series of ten, issued at monthly intervals, and covering the entire range of medicine and surgery. The editors of this volume do not pretend to give an abstract of all the articles published on the eye, ear, nose and throat, during the year. Their endeavor has been to select the more important contributions, and those that will be of interest to the general practitioner, as well as the specialist. In this they have been very successful, and we can recommend it to all.

A System of Physiologic Therapeutics. A Practical Exposition of the Methods, Other than Drug-Giving, Useful in the Prevention of Disease and in the Treatment of the Sick. Edited by Solomon Solis Cohen, A M., M.D., professor of medicine and therapeutics in the Philadelphia Polyclinic; lecturer of clinical medicine at Jefferson Medical College; physician to the Philadelphia Hospital, and to the Rush Hospital for Consumption, etc. In eleven octavo volumes. American, English, German and

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French Authors. Vol. VI., Dietotherapy and Food in Health. By Nathan S. Davis, Jr., A.M., M.D., professor of the principles and practice of medicine in Northwestern University Medical School; physician to Mercy Hospital and Wesley Hospital, Chicago; member American Medical Association, etc. Price, for the set complete, $27.50 net. 1901. Philadelphia: P. Blakiston's Sons & Co., publishers, 1012 Walnut Street.

The high character of the work which has been exemplified by these volumes is contained in the fourth. It is a practical guide to the scientific adjustment of food to individual requirements in health and disease. The first part treats of diet in health and the purpose of food constituents, with the analysis of food and the estimation of their value in calories. Numerous tables add to the value of this part.

Part two contains minute directions for the adaptation of foods to various disease conditions. In typhoid fever the author still holds to milk. Zomotherapy is given a prominent place in the diet of tuber culosis. He does not urge the exclusion of meat in nephritis.

The practitioner will find this a very satisfactory guide in his practice.

Dressed Hogs Infected with Smallpox.—There have been found recently in the Buffalo, N. Y., stock yards, dressed hogs which were evidently infected with smallpox. This was recognized by Dr. Ernest Wende, the Buffalo expert, and it is believed herein is found one of the ways in which smallpox has been scattered through the country. These hogs came from a disirict in Kentucky where smallpox had been specially prevalent

Fort Named for Dr. Lazear.—It will recalled that Dr. J. W. Lazear, late an acting assistant surgeon, United States Army, while engaged in research work at Havana on the etiology of yellow fever, permitted himself to be bitten by a mosquito, as a result of which he died of yellow fever. The War Department has recently named one of the seacoast defences near Baltimore, Md.,—Battery Lazear.

Obituary.—Dr. Paul F. Munde died at his home in New York City, February 7, 1902, after a prolonged illness, from heart disease. Dr. Munde was known throuhout the world. He was editor of the *American Journal of Obstetrics* for nearly twenty years. He held the position of professor of gynecology in the New York Polyclinic, and was author of a standard work on surgical gynecology.

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ST. LOUIS

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ORIGINAL CONTRIBUTIONS.

Surgery of the Heart.

BY H. L. NIETERT, M.D.,

ST. LOUIS, MO.

SUPERINTENDENT OF CITY HOSPITAL.

UP to a very recent period surgical treatment of the heart was considered out of the question, as the general belief prevailed that the slightest manipulation of that organ might produce instant death from shock.

A hemorrhage from the heart muscle or from one of the cavities was considered beyond all surgical aid. Tillman, in one of his recent works, still emphasizes this point and declares that the surgeon is absolutely powerless when it comes to bleeding from a heart wound.

To-day, however, the heart is treated surgically with almost absolute impunity. Wounds of that organ are treated as they are in other parts of the body. Pericarditis, purulent and other forms, are treated by surgical means with excellent results. Acute dilatation of the organ is often relieved by aspiration, etc.; so that the organ, which formerly was looked upon as being so delicate that the slightest wounding of it might produce instant death, is punctured and manipulated with comparatively little danger.

Read before the Medical Society of City Hospital Alumni, February 20, 1901.
Published simultaneously with the "Philadelphia Medical Journal."

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It is intended, in speaking of the surgery of the heart to-night, to treat briefly of the wounds only, since to cover the entire field of surgery of that organ would be by far too extensive a subject.

As stated before, wounds of the heart up to a recent date were always left religiously alone, and it was not until after the experiments of Cohnheim, Rose, Ellsberg and others, on animals and on the cadaver, that operation on the human heart muscle was attempted. Among the most valuable of all experiments were those made by Ellsberg in the laboratory of Mikulicz, the result of which is reported in *Johns Hopkins Experimental Journal* of September, 1899. He set to work in a systematic manner to determine how extensive an injury the mammalian heart could withstand and how extensive a suture could be introduced without interfering with its function. He found:

1. That the heart could be grasped with the hand or forceps and gently compressed with no appreciable difference in its action. It could be penetrated by a needle or a knife, producing only a temporary irregularity of the heart's action. He found this temporary irregularity following the wounding of both auricle and ventricle.

2. He demonstrated that penetrating wounds produced during systole of the injured part, bled more than those produced during diastole; and he claimed that wounds of the ventricle, produced during systole, were larger than those produced during diastole. For instance, a wound 2 mm. long, made in systole would become almost 3 mm. during the diastole; and one of 2 mm. made in ventricle during diastole, became almost as small as 1 mm. during systolic contraction.

3. He found that oblique wounds bleed less than perpendicular ones; that in oblique wounds the walls of the opening were more closely applied to each other and also that the canal was longer, both factors favoring the formation of clot.

4. That wounds in the right ventricular cavity were more dangerous than those of the left, explained by the facts that the wall of the right ventricle was thinner and hence wound-canal shorter, and also because the blood in the right side of the heart contained more carbon dioxid, and hence coagulated more slowly.

5. That wounds of the heart heal kindly and that the cicatrix was usually complete in about fourteen days.

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6. That interrupted sutures are better than continuous ones. He found that the muscular tissue included in the suture always atrophied and was replaced by connective tissue. A smaller number of muscular fibers were included in the interrupted than in the continuous sutures, hence produced less atrophy and less scar tissue.

The above were the conclusions drawn from the experiments on more than fifty animals, and have doubtless served to inspire a great portion of the confidence that is being manifested lately in heart surgery; at least, I am free to say that in the few cases that came under our observation, the treatment was governed largely by the observations of Ellsberg.

The effects of manipulation on the human heart have been extensively observed in the cases operated upon during the last few years. Watten, in his case of penetrating wound of the right ventricle, made an opening in the right chest wall large enough to introduce his fingers and with them held the heart while introducing the sutures. He performed his operation with very little difficulty. In the case operated upon at the St. Louis City Hospital, in April last, the edges of the wound were seized with two narrow forceps and the heart pulled forward into the opening in the chest wall until the sutures could be applied. The manipulation produced no appreciable shock or irregularity of the heart's action. In this case the knife, which inflicted the wound, had penetrated between the layers of the pleura anteriorly. There was bleeding into the pericardium, increasing the intrapericardial pressure and compressing the heart to the extent that the patient was pulseless and unconscious. The operation was performed without an anesthetic. When the opening in the pericardium was enlarged, allowing a free exit to the blood, and pressure on the heart was relieved, consciousness returned and the sutures were introduced while the patient was rational, and we were in a position to determine any shock that might result from the introduction of the needle; there was none that was apparent to the operator. In the more recent case, and which I will present to you to-night, the heart was held forward by means of the finger of an assistant, the manipulation producing but slight irregularity in the action of the heart.

By far the most frequent cause of death in heart wounds is hemorrhage and not shock, as was formerly supposed. It may prove fatal in two ways: (1) By exsanguination of the

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body. (2) By compression of the heart. The exsanguination of the body may occur if the external wound is so large as to admit of free bleeding to the exterior, or if the wound communicates with one of the pleural cavities, and a direct flow established between the pericardial sac and that cavity. Since in the 95 per cent of the wounds of the heart the pleura also is injured, death occurs by exsanguination in the large majority of cases. There is, therefore, only a small number of cases in which death is produced by compression of the heart, or, as Rose calls it, by "heart tamponade." This manner of death occurs if the external wound is small, and if the instrument enters between the layers of pleura; in other words, if the instrument enters through the extra pleural route. In these cases the bleeding occurs into the pericardial sac, distending it to its full capacity. It then follows that the intrapericardial pressure is increased to the extent that the heart is compressed and its action interfered with. This increase of pressure naturally occurs more rapidly if the bleeding is during systole, than if it occurs during diastole. Cohnheim demonstrated, during his experiments on animals, by injecting the pericardial sac, that the pressure manifested itself first on the auricles and beginning of the great veins, compressing them and producing a venous stasis. This may increase to complete obstruction to the flow of blood, and is manifested by difficult respiration and cyanosis. It then follows that the ventricles, which continue to contract, pump themselves dry and the heart finally stops, and death follows.

This intrapericardial pressure was demonstrated very nicely in our first case. When the pericardial opening, which was temporarily clogged with a blood clot, was enlarged to allow a better view of the heart, the blood spurted forth quite forcibly, carrying before it some of the large clots. The heart immediately began to act strongly, as it had been released of its strangulation.

It was distinctly observed that the bleeding occurred during diastole and stopped during systole. We were unable to offer a good reason for this until observing the wound on post-mortem examination. It was clearly seen that the position of the wound in the endocardium was likely the explanation for the bleeding during diastole alone. I have the specimen here to-night, and will demonstrate it later. You will see, if you look at the wound in the endocardium, that the cut

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lies between two columni carnæ, and runs parallel to them. I believe, that during the systolic contraction of the heart, the columni were drawn together, acting as valves to the opening, and thus preventing the escape of blood. And that during the relaxation of the heart muscle, the columni separated sufficiently to allow the blood to escape.

Wounds of the human heart heal kindly, as you will see by this specimen. You will see that the edges are firmly agglutinated, although patient lived only thirty-six hours after suturing.

Diagnosis.—I have recently collected the literature on twenty-seven cases of penetrating wounds of the heart, and from my observations I have concluded that it is very difficult and often impossible to ascertain whether the heart has been penetrated, or the pericardium alone has been injured. And yet it is very important, if possible, to make the diagnosis correctly at the very beginning, as it might greatly alter the method of treatment. From a study of the various cases, I have found it advisable to bear in mind that the main symptoms and signs are those produced by hemorrhage. Less important are those of shock. These symptoms and signs are produced either by gradual exsanguination of the body or by compression of the heart. If the surgeon will bear this in mind, I think he will have taken an important step toward the correct diagnosis of the case.

Supposing a case was brought to our observation with an injury to the heart which was moderate enough to remain within the scope of operable cases, what symptoms or signs would we expect to see? The patient, if conscious, would likely tell us that after the infliction of the wound, he was soon seized with a dizziness and vertigo, which compelled him to lie down. If patient is unconscious, our only source of coming to a correct diagnosis, is from the signs. With a thorough knowledge of the anatomy of the heart, the location and direction of the wound is a very important matter, and will often tell us what other signs we may expect. If the canal of the wound is so located and the anatomical relations tell us that the pleura is injured, we may expect the signs of internal hemorrhage. If the location and canal of wound is such that the pleura could not have been injured, we may expect external hemorrhage, or if the wound is small and closed

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with clots, we may expect hemorrhage into the pericardium, with the usual signs of compression of the heart.

The signs produced by heart wounds may be cassified under three headings:

1. Signs that indicate internal hemorrhage into the pleural cavity.

2. Signs produced by hemorrhage to the exterior.

3. Signs produced by hemorrhage into the pericardium alone.

In hemorrhage into pleural cavity alone, we will be apt to find patient anemic and covered with perspiration, the pulse rapid and weak; respiration may be labored on account of the compression of the lung; palpation may elicit the apex beat in its normal position; percussion may show a slight increase in cardiac dulness, and a dulness over the dependent portion of the chest cavity into which the hemorrhage is taking place. The most important sign, however, as given by writers in reporting their cases, is the splashing sound detected in auscultation, and indicates the presence of blood in the pericardium not under pressure. A whizzing sound, owing to the presence of air in the pericardium, is also frequently heard. Auscultation over the chest shows the absence of vesicular murmur over the region from which the lung has been displaced.

If hemorrhage is to the exterior only, the signs are usually most definite. The stream of blood may be red if coming from the left side of the heart, or dark in color if coming from the right side. It will be intermittent, whether coming from the ventricle or auricle, but the intermittency will be most marked if the hemorrhage comes from the left ventricle. The pulse be the same as in the foregoing, namely, weak and rapid, depending upon the amount of blood lost. Respiration will be free and easy, until after considerable bleeding has taken place, when cardiac dyspnea may present itself. Percussion would show a slight increase in the area of the cardiac dulness. Percussion and auscultation over the lung would show little that is abnormal, excepting during the last stage.

If hemorrhage is in the pericardium alone, producing compression of the heart, the patient will be more or less cyanosed, depending upon the amount of pressure upon the heart. The respiration will at first be shallow, but will soon become labored, on account of the compression of the auricles and large vessels. No apex beat will be noticed, and the

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radial pulse will likely disappear entirely. Percussion over cardiac area will show an increase of that area in all directions. Auscultation will show the heart sounds to be very feeble and barely audible. A splashing sound will likely be heard at first, but this sign will disappear as the pressure in the pericardium increses.

The conditions that may confound the diagnasis of injury to the heart, are the injuries to the large thoracic vessels.

After all, the main point for the surgeon to decide is, whether the hemorrhage that is taking place, is sufficient to endanger the life of the patient. It is this point that decides whether the case is an operable one or not.

I believe that all wounds in the chest causing a dangerous hemorrhage, should be explored to the bottom, if, in the judgment of the surgeon, the injured parts are accessible. This leads us up to the methods employed in approaching the heart. It may be accomplished in two ways: (1) By the extrapleural route, that is, the route in which the pleura is not disturbed; (2) by the intrapleural route, which takes us through one or another of the pleural cavities. The first method necessitates the removal of a part of the sternum, and is advisable only in cases where the pleura has remained uninjured. By this route the pleural cavity is not opened, which is very advisable, as the entering of this cavity would add greatly to the dangers in the case.

I made quite extensive experiments on cadavers, by means of long needles, passed horizontally backwards in the region of the heart, and by repeated experiments, have in this manner outlined, pretty accurately, the boundaries of the pleural cavity anteriorly. Following these experiments, I have outlined a flap that will cover all wounds of the heart, in which it is advisable to employ the extrapleural method. The flap, which consists of the skin and a section of the sternum, is as follows:

"An incision is made from the right border of the sternum transversely across on a level with the lower border of the third rib to a point about one inch to the left of the sternum. A second cut is made from the right border of the sternum across to a point one inch to the left of the sternum, and on a level of the articulation of the gladiolus with the ensiform. The left extremities of the two cuts ars are united by a perpendicular incision. The cartilages of the fourth, fifth and

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sixth ribs are divided, care being taken to remain close to the cartilages, particularly that of the fourth, as the pleura usually lies closely attached to that rib. It is an easy matter then to loosen, with an elevator, the tissues from the posterior surface of the sternum, as the pericardium is only loosely attached, and there is at no time any danger of injuring it.

"With a cartilage saw and the costotome the sternum is readily divided. However, care should always be taken not to allow the instrument to pass beyond the right border of the sternum, as there is great danger of injuring the right pleura, which lies immediately back, and comes up to the right border of the sternum. I have found it safest, after the sternum had partly been divided, to pass the finger back of the sternum and push away the right pleura before dividing the entire sternum. After dividing these bony structures the entire flap is forcibly turned toward the right side, and the cartilages on the right side partly broken."

I can hardly conceive of a wound of the heart being produced in which there is no injury to the pleura that can not be easily approached through this opening.

If the pleura has been injured, there can be no object in employing the extrapleural method. The pleural cavity being opened, the approach may as well be made through this cavity, as this operation is more easily and rapidly performed, and offers a better view of the heart. It consists of an osteoplastic flap, including the pleura, muscles and ribs. The best flap for the intrapleural method is that outlined by Rotter, and is as follows:

It consists of an incision, extending from the left border of the sternum, parallel to the third rib outward about two inches. A second incision is made on a level with the sixth rib, and extending from the left border of the sternum to a point two inches toward the left side. A third incision connects the outer ends of the first two incisions. The third, fourth and fifth ribs are then divided in the line of the incision, and are also the muscles and pleura. The entire flap is then turned forcibly toward the right side and the cartilages broken near the sternum. In this way the right ventricle and a large portion of the left can be brought clearly into view. The hand can readily be passed into the chest cavity and the heart grasped or pressed forward to facilitate the suturing.

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CONCLUSIONS DRAWN FROM MY OBSERVATIONS IN THE SUTURING OF TWO HEART WOUNDS.

1. That gentle manipulation may be applied without producing shock.

2. That the introduction of the suture produces but a slight irregularity in the heart's action.

3. That heart wounds heal rapidly.

4. That intrapericardial pressure is increased even if hemorrhage occurs during diastole alone.

5. That all heart wounds, in which there is danger of fatal hemorrhage, should be sutured.

6. That if the wound does not involve the pleura, the extrapleural route should be employed, as described above.

7. If the pleura has been injured, the intrapleural method should always be employed, and the flap devised by Rotter is the best.

8. Although it is advisable for the surgeon to familiarize himself with the methods of operation and the flaps devised by the different operators, a thorough knowledge of the anatomy of the region is most essential and each operator should modify the flap as best suits his case.

The patient who I am about to present is 27 years of age; he was born in Alabama and entered the Hospital on October 17, 1901, suffering from a penetrating wound in the left chest. The patient was in a semi-conscious condition and unable to give a history at that time. It was learned later that he had been stabbed on a steamboat near Chester, Ill. Immediately after the injury the patient ran a distance of about 100 feet and then became dizzy; he asked a bystander for a place where he could lie down; at this moment he fainted and fell. He knew nothing of his surrounding from this moment on until several days after the operation at the City Hospital. He was injured at 11 p.m., October 16, and arrived at the Hospital at 1:30 p.m., October 17. His temperature, on entering the Hospital, was 98°F., pulse 104, respiration 32; pulse was somewhat irregular, and the paticnt was also suffering from marked dyspnea. A hurried examination showed an incised wound in the sixth insterspace, a little to the right of the left papillary line. The superficial area of cardiac dulness was somewhat increased toward the left, there was absolute flatness posteriorly over the area normally occupied by the lower

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lobe of the left lung. A normal vesicular murmur was heard over the entire right lung and the upper portion of the left lung. The sounds were remote and indistinct over the lower portion of the left chest cavity, indicating the presence of fluid. Over the precordial area a splashing sound was heard, synchronous with the heart systole. From the symptoms and signs a diagnosis of internal hemorrhage was made and the case was considered an operable one. The patient was, therefore, immediately prepared for exploratory operation. The finger was introduced into the wound and the depth of it explored, and it was found that the pericardium had been cut. The finger was then introduced through the incision in the pericardium and it was found that the heart also had been entered by the knife. In order to further explore the wound and assertain its true nature, a flap was made including the fifth and sixth ribs on the left side of the sternum. The outlines of the flap were as follows:

The first incision was made along the lower border of the fourth rib, extending from the left border of the sternum outward for two inches. A second incision was made along the lower border of the sixth rib to a point about two inches to the left of the sternum. The outer extremities of the two incisions were united by a third incision. The fifth and sixth ribs were divided in the line of the outer wound, as were also the intercostal muscles and pleura. The entire flap, composed skin, muscles and ribs, was forcibly pulled toward the right side, partly breaking the cartilarges near the sternum. (The flap was a modification of that devised by Rotter, and fully described above).

Through this opening an excellent view could be obtained of the pericardium and the cut in it. Blood could be seen trickling from the wound with every systole. The left lung, which was continually obscuring the field, was held back by large gauze sponges; before doing this, however, the left chest cavity was emptied of its blood by turning the patient toward the left side; about one and a half pints was thus removed. The cut in the pericardium was then enlarged for the purpose of better examination of the wound in the heart. By tilting the heart forward by means of the finger of an assistant, a cut about three-quarters of an inch in length was seen in the wall of the left ventricle, located quite far back. A constant small stream of blood was seen to flow from the wound. The wound

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was not probed, but from all indications had penetrated into the cavity of the heart. An attempt was then made to draw the heart forward with slender forceps applied to the edges of the wound. This, however, was found impracticable, as the handles of the forceps obstructed the field of the operator. The index finger of the assistant was again applied and the heart brought forward into excellent position. Two interrupted silk sutures were introduced by means of a highly curved gut needle, and the hemorrhage stopped completely. While introducing the sutures, the thickness of the wall of the ventricle was carefully borne in mind, to avoid the endocardium. While holding the heart in position and introducing the needle, only a very slight irregularity was noted in the heart's action. No endeavor had been made at keeping the wound clean prior to the patient's entrance to the hospital; the wound was therefore treated as an infected one and drains were introduced. A small drain was therefore placed in the pericardium, back of the heart, and the opening in the pericardium only partly closed. Another drain was placed in the pleural cavity. The osteo-plastic flap was then allowed to fall back into position and sutured, excepting at point of exit of the drains.

Adherent Pericadium after Stab Wound.

The patient was unconscious for several days after the operation. During this time he was given frequent hypodermic injections of physiological salt solution and stimulants consisting of strychnin and whisky. The drains were removed on the fourth day.

On November 3d, the patient's temperature suddenly rose to 102°F. and he became very dyspneic, breathing was at the rate of 48 per minute and the pulse was 140. There was flatness over the lower lobe of the left lung and bulging over the left nipple. The external wound at this time had almost healed. It was decided that empyema had developed and paracentesis was immediately performed. A pale-red liquor was removed which, on smear preparation, showed the presence of pus cells and red and white corpuscles. A hasty thoracotomy

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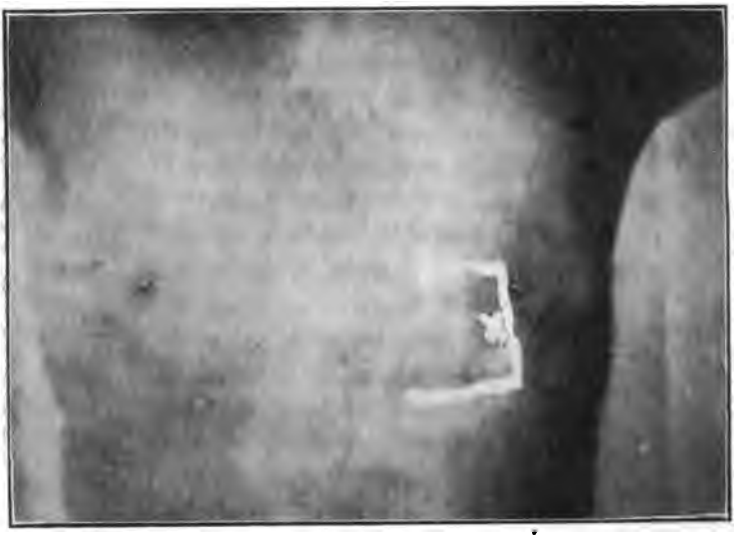
was then performed under local anesthesia. One inch of the eighth rib was removed and a large amount of purulo-sanguinulent fluid was drawn. A large rubber tube was then introduced. The patient was heavily stimulated with injections of strychnin and whisky. From this time on he made an uninterrupted recovery.



Photograph of the Outline of the Flap. The × Indicates the Point of the entrance of the Knife.

On November 27th the patient began slight exercise with a view to expanding the lungs and exercising the muscles of respiration; this was performed twice daily and consisted of blowing up a pneumatic bed-ring and practice in a series of calisthenics.

The patient, as you see, has almost completely recovered, the only trouble he complains of now is a slight dyspnea on violent exertion, which is likely due to the weakened condition of his heart.

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The Modern Pharmacology of Iron.

BY JOHN AULDE, M.D.,

KENNETT SQUARE, PA.

THE popularity of iron medication has notably decreased within the past decade, the profession having realized from clinical observation, that the brilliant results following its use in full medicinal doses were frequently attended with unfortunate sequelæ—such as inflammation of the kidneys, catarrh of the stomach and intestines, with headache and derangement of the liver function. Nevertheless, iron in minute doses does produce decided beneficial action in suitable cases, provided it is exhibited at the proper stage of the disease, as will appear from a brief consideration of its physiological actions.

When taken into the stomach iron is absorbed very slowly, and with large doses the greater portion is excreted by the bowel, more or less headache being produced, due to direct action of the iron upon the cerebral centers, or reflexly, from the effect upon the intestinal tract (Brunton). A trace also appears in the urine, but when administered subcutaneously, toxic action is produced, and instead of affecting the nervous system, inflammation of the kidneys ensues. Introduced directly into the circulation, non-coagulating salts of iron cause paralysis of the central nervous system and of the vasomotor nerves, loss of voluntary motion, enormous fall of blood-pressure and death (Brunton). This shows the selective action of iron and should be taken into account when the question of its employment is under consideration: What influence will it have upon cell function within this sphere of action?

The iron found in the hemoglobin of the blood performs an important function as an oxygen-carrier, and when lacking, a condition known as suboxidation results with the formation of cytotoxins (cell-poisons), arising from a reversion of cell function. In the class of cases, therefore, to which iron is adapted—anemia, chlorosis and general debility, I have for some time advocated the conjoint employment of nuclein from animal sources as the logical synergist, since it supports cellular activity by promoting normal oxidation and favors the elimination of waste products, including cytotoxins. Indeed, nu-

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clein is the normal anticytotoxin in both animal and plant life, and when lacking in quantity or defective in quality, the artificially-prepared product should be introduced.

Toxic action upon the nervous system, as outlined above, may be avoided by the administration of small doses, thus transforming the irritant action to that of gentle stimulation. This is especially desirable as regards the vasomotor nerves of the intestinal tract, which are paralyzed by large doses, "resembling that produced by arsenic, antimony, emetin and colchicin" (Brunton), although iron does not show the same general destructive action upon protoplasm. However, since alteration in blood pressure is usually a concomitant of blood dyscrasia, this difficulty may be overcome, at least in part, by the conjoint employment of caffeine, which has a stimulant action upon the splanchnic nerves. Iron itself in moderate doses is a vascular tonic, causing slow contraction of the blood vessels; in small doses it also increases the muscular power, and when combined with nuclein is, therefore, especially adapted to the treatment of debility with anemia and neurasthenic conditions, provided the normal functional activity of the liver is maintained—iron being eliminated chiefly by this organ when given in small medicinal doses, and discontinued from time to time.

Upon the liver, iron in small doses has a stimulating action, increasing the capacity of its cells to functionate, that is, to perform work; but large doses entail more work—from reabsorption through the entero-hepatic circulation, and in this manner obtund the nerve supply. Hence, the manifest advantages of salines, either alone or in conjunction with a suitable alkali, to stimulate the liver, to relieve congestion of the entero-hepatic circulation, to augment the flow of urine and flush the lymphatics, meantime restoring the normal alkalinity of the blood, the iron contributing to its oxygen-carrying capacity.

Iron has no considerable effect upon the cutaneous system except that following improved nutrition, but with alkaline-saline treatment as an adjuvant, decided improvement is usually manifest.

The clinical effects of the combination suggested upon the stomach and intestinal tract are entirely devoid of the characteristic astringent action, since the saline serves to remove from the system accumulated waste products, the result of suboxidation.

As a rule, the arseniate is to be preferred because of the

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well-known clinical value of arsenic in promoting tissue metamorphosis, although iron appears in the blood as a peptonate. When properly subdivided by thorough trituration, this salt is readily absorbed and promptly distributed, so that no untoward effects follow its administration.

Reference should be made here to the oligo-dynamic action in order to complete this brief résumé of the modern pharmacology of iron, and I desire to direct special attention to the laboratory investigations conducted for the purpose of showing its stimulating action upon protoplasm. These researches are of more than usual importance to medical science, since they afford ocular demonstration of the disadvantages and dangers of large doses of medicinal substances, or rather their emplopment in concentrated form, even when such substances are not altogether foreign to the economy. Thus, concentrated solutions of iron and other metallic salts arrest the growth of fungi and produce plasmolysis in the algæ spirogyra, while very dilute solutions have a stimulating action. It should be easy to understand this phenomenon. It serves to illustrate a fundamental principle which I announced a number of years ago, when presenting the claims for a recognition of cellular therapeutics; *viz.*, that the dose and effect complement each other in an inverse proportion, illustrating in a peculiar manner the general law of compensation. It remains for the physician to discover the happy medium, to determine when irritation ceases to produce a distinctly stimulant action.

How shall this be accomplished? Apparently, the task is hopeless, but on closer examination a satisfactory solution of the problem is attended with little difficulty. For example, the administration of iron for anemia, under proper restrictions, relieves the distressing symptoms, through its stimulant action upon protoplasm, cell function being harmonized and molecular changes (vibrations) restored to a condition approaching the normal. In the case of physical exhaustion, strychnin produces a similar effect, while mental fatigue is temporarily overcome by caffeine, just as melancholy forebodings disappear on the receipt of joyful tidings, all produced through the magic influence inherent in the cell. Eventually, we shall be able to determine with almost mathematical exactness the amount and kind of stimulus demanded, together with the precise effect produced.

In this connection I should also refer to the laboratory

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investigations of Raulin, relating to the action of metallic salts upon the fungus aspergillus, showing that iron alone is not a complete cell tonic. By the use of zinc in weak solution *with* the iron, the effect of the combination was very marked, protoplasmic growth being augmented two, three, and in some instances, nearly eight times that produced by iron alone. Equal proportions of each were used in securing these results, and any attempt to vary the strength of the solutions was attended with untoward effects, the growth being retarded. According to our author, the effect of manganese, while similar to that of iron and zinc was "less constant, less appreciable."

Clinical observation extending over a period of nearly ten years fully confirms the laboratory researches relative to the utility of iron and zinc in combination, or alternated, in which iron alone in various forms, or iron and mangenese, have been employed heretofore. Nevertheless, this combination still falls short of being a complete general tonic, as it has no apparent influence upon the sexual function. In the case of the fungus mentioned, notwithstanding the increased growth of mycelium, the development of conidia was retarded. To overcome this difficulty I now advise the alternate use of chloride of gold and sodium, generally in combination with nucleinic acid, the latter being a most efficient adjuvant.

A cursory examination of the foregoing remarks will show that iron may be used with advantage in certain directions and under suitable conditions for the relief of diseased conditions, but we must bear in mind that it possesses other properties than that of a food and a medicine. That it possesses magnetic properties will be readily admitted, and when it is borne in mind that electricity is chiefly responsible for the transmission of nerve impulses, its importance as a catalytic can not be doubted. In truth, the pharmacology of iron supplies the basis and ground work for the final elucidation of the fundamental principles upon which is founded the working hypothesis of molecular vibration. Iron is essentially a cell medicament and the clinical evidence in its favor confirms the claims advanced bearing upon cellular therapeutics. The following quotation from Prof. Loeb will be of interest in this connection: "The chief rôle of food is not to be digested and burned in the muscles and organs, as present day physiology assumes, but to supply ions. The heat developed is a by-product. The chief action is the production of electricity.

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The body is in some way a dynamo. Food, then, is of value according to the amount and kind of electricity it affords."

The principal clinical applications of iron are briefly enumerated, as follows: As a hematinic iron must be recognized as a superior remedy, and with suitable collateral or alternate medication, much will be accomplished by its employment, provided that it be given in small doses so that the degree of irritation shall not exceed that of gentle stimulation. It may be used in nearly all cases where impaired nutrition is the dominant factor. The addition of nuclein from animal sources is recommended in acute as well as chronic cases of blood dyscrasia as a means of restoring and maintaining a normally antiseptic condition of the body fluids, thus favoring cell activity. This is especially to be commended in the case of catarrh affecting the mucous surfaces, since it serves to complement Nature's efforts in restoring the vitality of the cellular structures, by sending an improved secretion (excretion?) to fortify and augment cell resistance. Stress is laid upon the value of the arseniate in these conditions, because of the influence of the arsenic content upon systemic metabolism.

Particular attention is directed to the exceptional value of iron and zinc in combination as a protoplasmic stimulant, noting the absence of action upon the sexual function, a deficiency which may be supplied by the alternate exhibition of chloride of gold and sodium in combination with nucleinic acid from animal sources.

It will be noted that I have made no reference to the "ion-proteid" theory of Loeb, nor to the effects produced by solutions of the electrolytes, not because of their lack of importance or scientific value, but for the reason that the theory is still incomplete, and for the present, can best be worked out by an expert having at his command ample laboratory facilities. It is believed, however, that these preliminary teachings, based largely upon clinical observations, will conform, in the main, to the final conclusions relating to the oligo-dynamic action of iron in respect to the function of protoplasm, molecular vibration being accepted as a practical working hypothesis.

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Valvular Lesions of the Heart.

BY L. RASSIEUR, M.D. AND LOUIS H. BEHRENS, M.D.,
ST. LOUIS, MO.

DR. NIETERT has kindly permitted the presentation of these heart cases before the Society. The signs which they present are pathognomonic of disease of the aortic and mitral valves. A few excerpts from the respective clinical histories relevant to the circulatory system will be given.

CASE I.—MITRAL STENOSIS.

History.—Habits are good, and free from any abuses of alcohol, tobacco and such other diversions. Family history reveals no predisposition to tuberculosis or heart troubles, but his mother was troubled with rheumatism. He is an American, aged 44 years, cook; social condition, single. Previous history,—during infancy, he was sickly. Among other diseases has had whooping-cough; his convalescence therefrom was rapid. His present trouble began last year, when he came from Colorado to St. Louis, and has been persistent. Patient has a sallow complexion, skin is elastic, adipose tissues small in amount; bony frame, fair; superficial veins everywhere distended; he becomes dyspneic on exertion.

Case 1.—Mitral Stenosis.

Examination.—Inspection of thorax: apex beat is seen in sixth interspace in the papillary line. Palpation: A presystolic thrill can be felt at point of apex. On percussion, the dulness extends upward in the third interspace 2 c.mm. to the right of sternum, to the left papillary line; downward, the dulness verges with the hepatic dulness. Pulse is intermittent, is equal, small, soft, but incompressible—about 80 to minute.

Read before the Medical Society of City Hospital Alumni, February 6, 1901.

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Auscultation.—A presystolic murmur heard best in sixth interspace, papillary line; second (pulmonic sound) is accentuated. Murmur is roughened, and ends in the systolic shock.

Urinalysis.—Single specimen, specific gravity, 1020; color, light straw; translucency, slight turbidity; reaction, acid; sugar and albumins absent.

Blood Analysis.—Erythrocytes, per c.mm., 6,000,000; leucocytes, per c.mm., 8,000; hemoglobin, 70 per cent. (Gower's).

CASE II.—AORTIC STENOSIS.

History.—Patient, McD., Irish, aged 58 years; occupation, an unskilled laborer; social condition, single. Habits: formerly patient was an excessive user of alcoholic liquors, and did very hard work. Family history reveals no predisposition to arterio-sclerosis, rheumatism, heart disease or tuberculosis. Previous diseases, has always been very healthy, except occasional attacks of rheumatism; denies all history of venereal diseases. Present trouble has existed almost three years. Patient has a senile expression, extreme kyphosis, integument not very elastic, adipose and musculature fair, bony frame, weak; blood vessels hardened, is dyspneic; lower extremities edematous, appetite is good, and complexion ruddy. Patient becomes dizzy and dyspneic on exertion; cough is distressing; lungs are very emphyematous, and presents all the clinical and physical signs of emphysema.

Case 2.—Aortic Stenosis.

On inspection, apex beat not seen. Palpation: Apex beat almost impalpable, on account of emphysema. Dulness extends to above the fourth rib; to the left 1 cm. internal, and parallel to the left papillary line; to the right, the right sternal border; below is continuous with hepatic dulness. Pulse is small, regular, incompressible, and of a frequency, 80

Auscultation.—Systolic murmur not heard at the apex, heard best at the junction of the second right rib with the sternum, and transmitted along the great vessels of the neck, and heard posteriorly.

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Urinalysis.—Single specimen, specific gravity1015; color, light straw; translucency, clear; reaction, alkaline; albumins abundantly present; sugar absent; crystals triple phosphates; casts, hyaline.

Blood Analysis.—Erythrocytes, per c.mm., 6,200,000; leucocytes, per c.mm., 13,400; hemoglobin, 67 per cent. (Gower's).

CASE III.—DOUBLE AORTIC MURMUR, ASSOCIATED WITH A RELATIVE MITRAL INCOMPETENCY MURMUR.

History.—Patient, Mr. M., American, aged 37 years; occupation, porter; social condition, single. Habits, formerly drank and used tobacco excessively; he worked very hard. Family history reveals no predisposition to tuberculosis, rheumatism or heart disease. Previous diseases,—has had pertussis, roseola, etc.; no venereal diseases; rheumatism, three years ago. Present trouble began one year ago, with the following symptoms: Throbbing headache, dizziness, ringing of the ears, dyspnea, dull aching pain over precordial area, and swelling of the feet. Patient has a good appetite; assimilation fair; integument is elastic; adipose, muscular and osseous system are fair; blood vessels are hardened.

Case 3.—Double Aortic Murmur Associated with a Relative Mitral Incompetency Murmur. Right Pulse.

Inspection reveals a pulsation of the carotid and temporal arteries, subclavian, brachial, and entire radial arteries. Apex beat is diffused over an area covering left fifth and sixth interspaces, between anterior axillary and papillary lines. Palpation: A slight thrill can be felt over common carotid arteries; pulse is full, jerky, and suddenly receding (simulating the Corrigan pulse). Pulse is 80. The apex impulse is weak and undulating. Percussion: Outer border of dulness is anterior axillary line, upper border is third rib, inner border is 1 cm. external to right border of sternum, lower border merges into the hepatic dulness.

Auscultation reveals a systolic, and diastolic bruit heard

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best at aortic area, transmitted along the large vessels of neck, arms and down the back, also a systolic murmur at the apex.

Urinalysis.—Single specimen, specific gravity, 1030; color, amber; reaction, acid, almost neutral; translucency, cloudy; albumins present, 1 per cent; sugar absent; crystals, triple phosphates and amorphous urates; casts, hyaline.

Blood Analysis.—Erythrocytes, per c.mm., 3,200,000; leucocytes, per c.mm., 16,500; hemoglobin, 47 per cent. (Gower's).

CASE IV.—DOUBLE AORTIC MURMUR, ASSOCIATED WITH A RELATIVE MITRAL INCOMPETENCY MURMUR.

History.—Patient, Mr. W., American, aged 43 years; occupation, porter; social condition, single. Habits, occasionally drank and smoked to excess; he worked at times very hard. Family history reveals a predisposition to heart trouble on his mother's side, otherwise free from dyscrasia. Previous dieases, has had pertussis; a good luetic history. Present trouble began six years ago, with pain in the back, attributed to heart trouble at that time. He presented the following signs: Headache (throbbing), dizziness, ringing of the ears, flashes of light, spots before the eyes, cough, dull aching over the precordial region, dyspnea, hemoptysis after violent exertion. Appetite good, assimilation moderate. Integument is elastic; adipose, muscular, and osseous systems are fair. Blood vessels are harder than normal.

Case 4.—Double Aortic Murmur. Right Pulse.

Inspection reveals pulsating carotids, temporals, subclavians, brachial and radial arteries. Apex beat is undulating and diffused over an area occupying fifth and sixth interspaces, between papillary and anterior axillary lines. Palpation: A distinct fremitus can be felt over the large vessels of the neck and over the right side of chest anteriorly. Pulse is full, jerky, and rapidly receding; frequency, 84. Percussion: Outer border of dulness is anterior axillary line, upper border is third rib, inner border is 1 cm. external to right border of sternum, lower border merges into hepatic dulness.

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Auscultation reveals a systolic, and diastolic bruit heard best at aortic area, transmitted along the large vessels of neck and posteriorly, also a systolic murmur of the apex.

Urinalysis.—Single specimen, specific gravity, 1025; color, pale straw; reaction, alkaline; translucency, turbid; no albumins; no sugar; triple phosphate crystals; no casts seen.

Blood Analysis.—Erythrocytes, per c.mm., 4,200,000; leucocytes, per c.mm., 13,000; hemaglobin, 41 per cent. (Gower's).

CASE V.—ANEURYSM OF ARCH OF THE AORTA AND INNOMINATE ARTERY.

History.—Patient was born in Missouri, and is 45 years of age; social condition, single; occupation, laborer. Habits, formerly used tobacco and alcoholic liquors to excess; sexually excessive. Family history: Both parents lived to a very old age; no history of rheumatism, tuberculosis, or any other

Case. 5.—Aneurysm of Arch of the Aorta and Innominate Artery. Right Pulse.

dyscrasia can be obtained. Previous diseases: Has had joint tuberculosis and variola; denies ever having had any venereal disease. Present trouble began ten weeks ago, with pain in right supraclavicular region. Patient used to carry heavy loads on his right shoulder, and suddenly found it to pain him. It felt as if "something was giving away." Has

Case 5.—Aneurysm of Arch of the Aorta and Innominate Artery. Left Pulse.

also pains in his right arm, of a "neuralgic" character, and he can not lift as well as formerly. Vessels on right side of neck and chest are distended. He has also a paroxysmal dry cough. He expectorates twice daily a sputum cup of a thick ropy sputum. Dyspnea and dysphagia is paroxysmal.

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Inspection: A pulsating tumor is seen at right sternal border, above the second rib. Apex beat is seen in sixth interspace, and in papillary line. Palpation: Pulse is unequal, regular, soft and incompressible. Right pulse is synchronous with, but not as strong as the left pulse. The tumor is a yielding and elastic mass with a slight thrill. Percussion: Area of dulness is increased above and to the right, while at the apex the dulness is increased downward and to the left.

Auscultation.—Double aortic murmur is transmitted along the great vessels and heard posteriorly.

(Tracheal tugging is very prettily illustrated in this case. There is considerable arterio-sclerosis of the temporal vessels).

Urinalysis.—Single specimen, specific gravity, 1035; color, amber; odor, normal; reaction, acid; trace of albumins present; no sugar; no casts seen; a few epithelial cells and oxalate of lime crystals seen.

Blood Analysis shows 4,800,000 red blood-cells per c.mm.; 10,000 white blood-cells per c.mm.; hemoglobin, 49 per cent. (Gower's).

(The above histories consist of the clinical excerpts relevant to the heart troubles and are taken from the St. Louis City Hospital records).

Influenza: Especially in Infants and Children.

BY W. L. JOHNSON, M.D.,

ST. LOUIS, MO.

INFLUENZA in infants, as in adults, generally produces an angina, catarrhal difficulties of the respiratory or the gastro-intestinal tract and more or less profound nervous symptoms. Quite characteristic of this disease is the prostration, which is out of all relation to the apparent involvement of the organ affected. And, again, characteristic is the alternate revival and prostration—that is to say, the infant may one hour be so prostrated as to warrant the gravest apprehension and the next hour appear practically well.

History.—Influenza is not a new disease, it was recognized

Read before the Bethesda Pediatric Society, March 28, 1902.

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and described in our own country as early as 1647, when we had our first known epidemic; more, however, was learned from the epidemics of 1890, '91 and '92.

Etiology.—The Pfeiffer bacillus is admittedly the offending micro-organism. It may gain entrance through the mucous membrane of the respiratory or alimentary tract, or the conjunctiva. That influenza is "catching" would appear settled from a study of Sissley's résumé:

1. The first case of influenza in a town is generally a patient who has come from an isolated place.

2. Isolated cases precede the epidemic.

3. Influenza extends along the line of human intercourse.

4. Isolated persons, such as prisoners and inmates of asylums and convents, often escape the disease.

5. The number of those affected in an epidemic increases until a maximum is reached, and then declines, as in the case of other contagious diseases.

Season.—Cases of influenza occur at any season, but usually, especially the epidemics, are confined to the winter and spring.

Pathology.—Except in complicated cases no lesions are to be found; there is usually a venous congestion and marked injection of the venous capillaries (Ashby and Wright).

The streptococcus and even the diplococcus have been found in company with the Pfeiffer bacillus (in those cases dying of pneumonia), so that we can not speak of the lesions of the lungs except in the cases of cellular pneumonia, as described by Dr. Glasgow, where there is no inflammation, but a cellular infiltration, and this seems to be due to the streptococcus, and while occurring frequently in grip is not necessarily due to the influenza bacillus or toxins of themselves.

Incubation.—This is from a few hours to a few days.

Course of the Disease.—It is impossible to prognosticate definitely the outcome, complications or sequelæ of this disease. Many cases are moderate, and after three or four days recover, but recovery is slow; in others it is "as indefinite as phthisis." After subsidence of the actual attack there remains a train of symptoms worse, if anything, than the initial disease; arthritic symptoms, neuralgia, gastric and intestinal disturbances, cardiac neusoses, tachycardia, irregularity of rhythm, acute dilatation, etc.

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SYMPTOMS.

Grip may be called the "mimic disease." The symptoms are varied, and frequently we call a disease grip because we can not assign the symptoms to any other disease. It, like teething, is at times, a scapegoat.

Temperature.—This varies, but quite characteristic, both in young and old, is its sudden changes. Shivering, alternate cold and hot sensations; sometimes rigors occur, and, no doubt, in infants a chill is replaced by a convulsion or great collapse.

Influenza may run its course, or a part of it, with a subnormal temperature. In infants this type frequently occurs and at first baffles us. In cases where cerebral symptoms predominate there is often hyperpyrexia. While sweating is frequently noticed and is often spontaneous, no doubt the antipyretics are responsible for much of the sweating, and it is curious to note how certainly they produce sweating and lowering of temperature in these cases and how illy borne the cold bath frequently is.

There is a disposition to attack the weak spots; thus, one who is frequently the subject of other anginas, respiratory affections or gastro-intestinal disturbances, will manifest symptoms pointing to disturbance of that particular system.

Purpura not infrequently occurs in the course of a grip in the debilitated, and so may edema, not attributable to heart or kidneys, but probably toxic. Neither is characteristic.

Digestive disturbances exist from the start, chiefly anorexia. There exists also furred tongue and sometimes—almost always, in the abdominal type of infants, vomiting; abdominal pain and nausea are common; diarrhea is often exhaustive and suggests typhoid.

Those symptoms which are considered pathognomonic by some are pain in the eyeballs, copper taste in the mouth, injected conjunctiva and great weakness.

Symptoms of cardiac insufficiency are common and in *infants* this constitutes a great danger, especially if there is congestion of the lung.

Physical Signs.—While there may be nothing especially noticeable the angina is considered typical. Dr. Saunders was first, to my knowledge, to describe this peculiarity: A uniform blush, sharply delineated and absolutely symmetrical. This

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redness extends, probably, a little anterior to the foremost pillars.

Franke (*Deutsche Arch. f. Klin. Med.*, LXX, 3 and 4) describes a typical red stripe, "like a rainbow, arching the palate," on the anterior pillars, and says it is particularly marked and significant in chronic or recurring cases. His second typical sign is a swelling of the papillæ of the front of the tongue; this has been designated *raspberry tongue.*

Kolipinski describes small convex pearly-white or transparent projections, of the size of a grain of sand on the soft palate, which he considers pathognomonic.

Nervous Symptoms.—These are always well marked. Extreme depression in the adult, depression or irritability in the young. Meningitis is not infrequently simulated in infants, and in some cases infants and children are greatly distressed on handling, as in making an examination. This obstreperous resistance is thought by some to be of help in differentiating the disease from typhoid. Pain and cutaneous hyperesthesia are generally present.

Respiratory Symptoms and Signs.—So frequently is the respiratory system involved that this is given especial place. There are attacks which differ little from ordinary anginas and rhinitis that the principal point of differentiating is the great depression, just as cholera infantum is differentiated from an ordinary bowel infection.

There is almost always a nagging cough, and in the young there may be a cough resembling very closely the cough of pertussis. Bronchitis is apparently identical with the ordinary type, except that often it is like the temperature: Now here, now gone! Strangest of all is the vagrant pneumonic congestions, as illustrated by the appended case (Case I). A dulness, but no bronchial breathing. Often, over dull area, diminished breath sounds, but not a râle. Again, dulness and râles, but no bronchial breathing. To-morrow no physical signs. Influenza certainly has its vagaries, and nowhere is it better illustrated than in pseudo-pneumonias, seen especially in infants. Chest walls have been punctured for fluid, and no fluid found. Soon thereafter no signs of flatness or dulness are to be discovered.

Sequelæ.—Grip is notorious for its sequelæ. No attempt will be made to enumerate, much less to outline these aftermaths. Neuralgia is often severe and intractable. Myalgia

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is not infrequent. Persistent joint pains are now and again met with. Otitis media is not uncommon in infants (Case II). Antrum troubles are time and again traced to grip in the older, and may, if looked for, be found sometimes in infants. The nervous system is frequently bankrupt, and neurasthenia is a common after-effect.

DIAGNOSIS OF INFLUENZA.

This is frequently made by exclusion. However, there are some points in the differential diagnosis, it may be well to review.

From Scarlet Fever.—The rash may resemble that of scarlet fever, but is usually not punctate, is more patchy, more evanescent, fading and becoming intense alternately, and does not necessarily appear as early. In scarlet fever there is leucocytosis, in influenza not. The throat appearances are not identical.

From Measles.—The rash, in our experience, does not closely resemble that of measles, but Koplik's spots of measles, the definite pains of influenza, the time of eruption, the existence of an epidemic of one or the other diseases will aid us in differentiating.

From Pneumonia.—The lack of physical signs of complete consolidation, the leucocytosis of pneumonia, the course of the disease, the high tension pulse of early pneumonia against the low tension pulse of grip are of importance.

From Typhoid Fever.—The Widal reaction, progressive enlargement of the spleen, the rose spots, the tongue, the steady progressive rise of temperature, the apathy, in well-marked cases usually make typhoid prominent as contrasted with the irregular temperature, little or no enlargement of the spleen, of influenza.

From Whooping-Cough.—In this disease the increase of lymphocytes, the absence frequently of fever for a prolonged time, the persistent and well-defined whoop and the history of contact, usually sooner or later, help us reach a decision.

From Diphtheria it is sometimes necessary to have recourse to a bacteriologic examination.

Some cases resemble cerebro-spinal meningitis and a bacteriologic examination must be resorted to.

Lumbar puncture has had a favorable effect on grip. Sacquepne (*Arch. Gen. de Med.*, May, 1901) quoted in "Practical Medicine Series," October 1901.

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TREATMENT OF INFLUENZA.

There is no specific for influenza. To allay nervous symptoms, phenacetin, salipyrin, and other derivatives of the kind are much resorted to, and sometimes of great value. Small doses, not for antipyresis, but as sedatives, are of decided worth. Initially, calomel in fractional doses, with several doses of pilocarpin to increase elimination, seem incated.

The tepid bath is better, as a rule, than the cold bath, as a sedative and antipyretic.

Rest in bed is imperative in all cases of genuine grip. The after-effects should be treated with vigor and persistence.

Elsewhere the writer has gone more thoroughly into the treatment of influenza.

CASE I.—Baby, A., aged 7 months, seized with wheezing, cyanosis and marked depression, February 27, 1902. Physical examination showed general bronchitis, with dulness over right upper lobe and crepitation, but no bronchial breathing. Next morning bronchitis, dulness, and crepitation had vanished.

The infant was critically ill for more than a week, alternating between revivals and great depression, which was combated by hot mustard bath, mustard pastes, nitroglycerin and strychnia. Complete anorexia, and considerable wasting. About ten days after onset, marked dulness over right lower lobe, but no râles, no bronchial breathing. On the other hand, diminished breathing.

The lungs were examined every day, and between the above signs there was nothing noticed. The breathing, the sudden changes, the "grip throat," all pointed away from pneumonia. The temperature ranged from nearly normal to 104°F, and over; the highest temperature frequently in the morning.

After consultation, we were more than ever satisfied of the diagnosis. The case illustrates the peculiar lung symptoms, and this infant would one hour be playing with a doll and the next hour be in collapse.

CASE II.—L., aged 22 months, several convulsions, with initial fever 104°F., typical grip throat, no lung symptoms, great depression and fretfulness, alternating with standing in bed and greeting the passer-by with a smile, temperature vari-

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able. Evidence of otitis. Examination revealed bulging membranes, quite vascular. In about three days from first observation of ears, about eighth day of disease, both drums ruptured, and a purulent discharge (not examined) made its appearance. Yielded in a few days, and infant is now well.

[2241 S. GRAND AV.]

Some Clinical Characteristics of Erysipelas.

BY PHILIP B. NEWCOMB, M.D.,

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HOUSE PHYSICIAN BETHESDA HOSPITAL AND BETHESDA FOUNDLINGS' HOME.

IN presenting the subject of erysipelas, it is the hope of the writer to dwell merely upon some aspects of the disease, as observed recently in this institution, rather than to bring forward the atypical case or to seek after any new thing.

Out of ten cases, occurring within the past four months, infants were affected in seven instances, the remaining being adults. Of these ten cases only one recovery is recorded, a mortality of 90 per cent, in view of which this disease has become the most feared of any met here by attending physicians. Tyson,[1] for instance, speaks of a favorable prognosis, excepting only those of great age, intemperate habits, and broken health from his general rule of recovery, even without treatment; and at the St. Louis City Hospital recovery is almost universally expected. This view is much too sanguine to be tenable, when the disease is met with in early life, however. Rotch[2] says that where erysipelas occurs before the end of third week, the infant seldom survives, and that it is a most dangerous disease up to the end of the third or fourth month. Packard[3] refers to the almost universal fatality of the disease during the first year of life, and adds that in the newborn, *i. e.*, those under 15 days, it is practically *always* fatal.

This fact must be due to the lack of resisting power and the ease with which the process extends in the very young; but granting this, the rapid course of several cases met with here might lead to the inference that a peculiar virulence of infection has been encountered, and reports are hereby submitted.

Read before the Bethesda Pediatric Society March 28, 1902.

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CASE I.—Chester Lovell, aged 1 month, a previously healthy child. Had an enlarged lymphatic gland in the cervical region, which was poulticed with a 2.5 per cent carbolic solution. On the skin in this vicinity an inflammation arose, soon assuming the peculiar appearance of erysipelas, and which spread rapidly over the head and face. The child died 18 hours after the first skin manifestation.

CASE II.—Mabel Thomas, aged 3 months. Had an acute otitis media, right side, with rupture of the membrana tympani and purulent discharge for two days, during which time the external ear and auricle became greatly swollen, and the picture of a phlegmonous cellulitis was presented. The character changed, however, to the red, shiny, sharply-defined inflammation of erysipelas, which spread rapidly up over the face and scalp, and ran down the neck. The discharge from the ear ceased, as is usual in such instances, but death occurred in 40 hours from the time the disease declared its character.

CASE III.—James McBeth, aged 3 months. Under treatment for congenital syphilis, when he became the subject of primary facial erysipelas, the process starting about the alæ nasi. Death resulted in 48 hours, the inflammation having by this time involved the entire head, face, neck and back.

CASE IV.—Walter Davis, aged 1 month. The disease ran a fatal course of two and a half days.

CASE V.—May R., aged 18 days. At the time of admission, three days previous, a slight redness was noticed about the umbilicus, and the history is presented of the death of the mother from "blood poisoning." Erysipelas developed at this point and over the right hip, spreading rapidly over the abdomen and down the thigh. Death occurred in 28 hours after the diagnosis was made.

While the course of the disease has been so rapid in the instances cited, yet the onset in these and all other cases did not prove to be so sudden, severe or violent as we are often lead to believe is usual. In none of the seven infants affected, were the nurses able to notice a chill or convulsion as the initial manifestation, the babies ran slight temperatures, which gradually increased; the child was sick, but not markedly prostrated up to the time the skin lesions made definite and diagnostic announcement of the disease. Of the three adults, one case suffered a severe chill early in the morn-

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ing of the first day; the others complained merely of malaise and anorexia during the stage of invasion, and there was no vomiting. Pneumonia did not occur as a complication in any case, and vomiting, stated by Rotch,[4] to be a frequent precedent of collapse in infants, was not noted in a single patient.

Two cases present interesting features as regards the etiology, in which it seems scarcely possible to demonstrate any external lesion, as the port of entry for the infection. Case one, just quoted, is an example of this extension from within outward, if the expression be ever permissible in this disease. The infant, as may be remembered, was affected with an enlarged lymphatic gland of the deep cervical system at the posterior border of the sterno-cleido-mastoid muscle. An external inflammation appeared, at first thought, due to the carbolic acid applications which, however, soon assumed the distinctive erysipelatous character.

CASE VI.—Clarice May, aged 21 days. Suffered precisely the same experience as regards the preceding glandular inflammation in the neck, the posterior auricular glands being affected in addition. Case two, already noted, began with an acute purulent otitis media, but seems hardly to belong in this class, inasmuch as a secondary infection with the streptococcus of Fehleisen is probable.

The mortality shows that the treatment has unfortunately been of small value, only one case of the ten surviving the attack. The internal therapeusis was of an eliminative and supporting character. Pilocarpin and saline purgatives were the favorite agents employed under the former heading. Serumtherapy was adopted in three cases, and proved uniformly unsatisfactory. Case one received two hypodermic injections of antistreptococcus serum of 5 c.c. each, on the second day of the disease, at six-hour intervals. From the time of first injection until just before the second attempt, the temperature suffered a fall of 3.2°F., from 102.°F., but death intervened 8 hours later.

CASE VII.—Dick Altmeyer, aged 1 year. Shows a much better record for this form of medication. On the third day of the disease he also received two injections of 5 c.c. each, at a like interval. Thirty minutes after the first injection, the temperature had fallen from 103.4°F. to 98.4°F. That the effect was but temporary, may be seen from the accompanying chart, a temperature of 104.2°F. being recorded four hours

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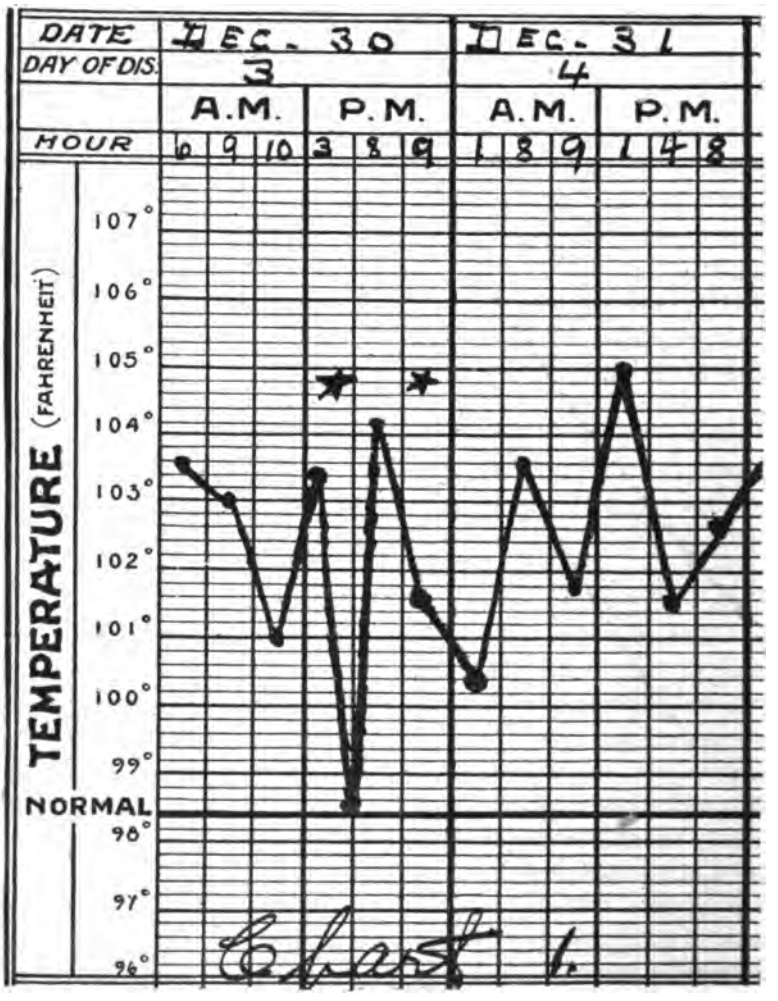
later. The second injection failed of so pronounced an effect, in that a decrease of but 1.2°F. is noted.



Case 7.—Two Injections of Antistretococcic Serum—Marked *.

CASE VIII.—Miss M. T., aged 42 years. Primary erysipelas of the face. Yielded no results of a permanent nature for seven injections of serum, 10 c.c. each in amount, extending over the first three days of the disease. According to the

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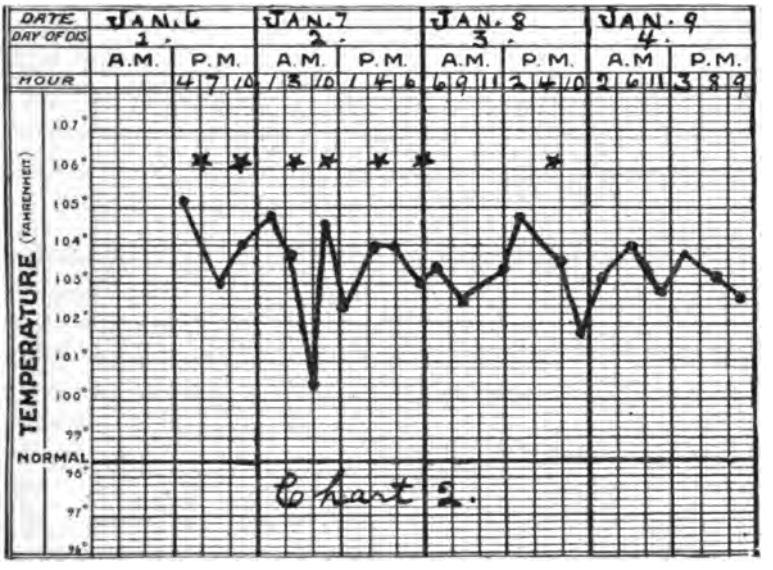
chart below, the thermometric findings, shortly after each injection, are shown to be:

First injection	2.2°F.	decrease.
Second "	.8°F.	increase.
Third "	3.4°F.	decrease.
Fourth "	1.2°F.	decrease.
Fifth "		no change.
Sixth "	.4°F.	increase.
Seventh "	1.8°F.	decrease.



Case 8.—Seven Injections of Antistreptococcic Serum—Marked *.

Death occurred at the beginning of the fifth day.

Of the numberless local applications recommended in this disease, ichthyol was chosen for the most extended trial The drug was employed in the form of aqueous solution, collodion, and with vaselin as an ointment, in various instances. A formula found superior to any of the above combinations in checking the extension of the inflammatory process, is the following:

℞ Ichthyoli.....gm. 8.
Resorcini.....gm. 4.
Ung. hydrarg.....gm. 32.
Lanolini.....gm. 32.

M. Sig.—Anoint parts; cover with gauze, rubber tissue, and light dressing.

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CASE IX.—Mrs. Malone, aged 60 years. A mixture of equal parts of camphor and carbolic acid was painted over the face, which was then covered with cotton and rubber tissue, the whole being bound down by strips of adhesive plaster. This patient made a nice recovery in seven days. Case three, treated in like manner, died at the end of 48 hours. A paste containing kaolin, glycerin and boric acid was used throughout in Case six, but nearly the entire body of the child was affected, it proved impossible to keep a thick layer covering all portions and the test of the preparation is, hence, of doubtful value. Death occurred on the eighth day.

Case two received applications of gauze saturated in the following solution:

℞ Alum.....gm. 1.
Liq. plumbi subacet.....gm. 5.
Aquæ dest.....gm. 100.

The results, as regards the arrest of the process, were negative.

It appears plain that the local treatment was of little avail. A new line of external attack upon the inflammation has been suggested which will be given a trial in any subsequent appearance of the disease in this institution. This plan of action is based upon the fact that the streptococcus of Fehleisen is aerobic in character and the effort is made either to abstract oxygen from the affected tissues or to prevent the further supply of oxygen through the medium of the atmosphere. The former method is advocated by Curtis,[5] his idea being based upon the affinity of sodium sulphate for oxygen. It is claimed that when the former is applied as a poultice to the diseased area oxygen is abstracted so rapidly as to destroy or inhibit the growth of the micro-organism.

The second method, that of preventing the contact of the affected parts with the air is proposed by Dr. Saunders, of this city. Yeast dough is to be applied as the protective agent beyond the boundaries of the inflammation and retained in position by light dressing.

In conclusion, there remains to be mentioned in regard to the foregoing cases a singular lack of continued high temperature throughout the course of the disease and more especially a peculiar fall in temperature observed in several cases which closely simulated crisis and which the pulse-rate did not herald as collapse.

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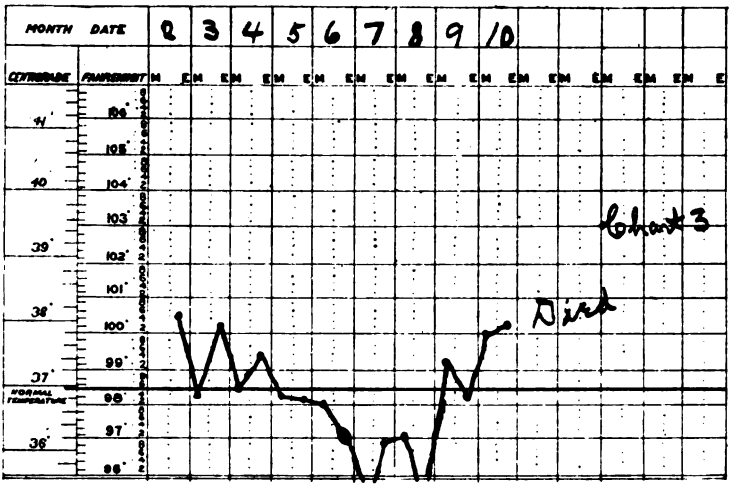
Secure in the belief that measures of hydrotherapy were at last having their effect the physician's surprise would be great upon seeing the welcome improvement, the supposed crisis (which we know sometimes does occur) more or less suddenly transformed into subnormal temperature, collapse and death. Case seven had a subnormal temperature continuously for 23 hours preceding death and it was normal several hours in advance of this fall. Case six showed an apparent improvement and normal temperature on the eighth day—collapse followed and four hours later the child was dead. Case three behaved in a manner somewhat similar, the temperature never rising to 98°F. for the 26 hours preceding his demise. Case five presented a subnormal temperature during the last 26 hours of her life, the finding at one time being 95.2°F. Finally, should be mentioned—



Case 10.—Peculiar Temperature Curve. Complicated by Embolism on the Seventh Day.

CASE X.—Miss K., aged 28 years. She was partially paralyzed as a result of two previous attacks of embolism, had a large mitral lesion with marked failure of compensation, and had suffered an almost uncontrollable hemorrhage from the nose some months before. At the time of her attack of erysipelas the feet, legs, hands and face were edematous, and the outcome could scarcely he held in doubt. Nevertheless this patient lived eight days, but the temperature during this time

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did not once exceed 100.4°F., as will be seen from the accompanying chart. On the seventh day she had a third attack of embolism, at which time the temperature reached its lowest mark—95.2°F.

Vierordt,[6] it is true, attributes embolism itself as a causative factor of low temperature locally, but that does not account for the lack of continued high febrile movement during the whole course of the disease and subnormal temperature findings prior to the sixth day. The last attack of embolism left the patient in a state of coma, and death occurred two days later.

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[3651 VISTA AVENUE.]

A New Germicide.—Drs. Novy and Freer, of the University of Michigan, if press reports are to be credited, have discovered an extraordinary powerful germicide. The chemical name of this new substance is benzozolacityl hyperoxide. It is a non-poisonous powerful substance which rapidly destroys all bacteria. The antiseptic belongs to the group of organic acid hyperoxids.

Sunlight Cures.—Professor Finsen, of Copehagen, has received much praise for cures effected by sunlight; but an English scientist points out that this method of curing disease was known and practiced in England centuries ago. John Gaddesden, who wrote the famous medical treatise, "Rosa Medicinæ," and who died in 1361, treated the son of King Edward I for smallpox by wrapping him in a scarlet cloth and placing him in a bed and room with scarlet hangings, and the patient recovered, never showing any trace of smallpox. There is also evidence that other physicians believed in the virtues of phototherapy, and adopted it to cure certain forms of skin diseases.—*Philadelphia Medical Journal.*

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LEADING ARTICLES.

THE THERAPEUTIC VALUE OF ALCOHOL.

No subject has received a greater share of attention in the last few years than the therapeutic value of alcohol. Experimental physiology and therapeutics in a wide range of application have thrown a flood of light on its action, and contrary to the wide divergence of views among clinicians, physiologists are reaching almost unanimous conclusions. Pharmacologically, the drug must be considered a narcotic, having an exciting and then a depressing effect on the higher nerve centers.

Among the most prominent clinicians of the Nineteenth Century the opinion was fairly constant ond fixed that alcohol was a valuable heart stimulant, and had a most favorable influence in the toxemia of the acute infectious diseases; *e.g.*, typhoid fever, pneumonia, diphtheria, etc. (Bartholow, Struempel, Osler, Shattuck.) It was furthermore urged that it acted as a food, since very large quantities were oxidized during these fevers. It has been given a high place in the treatment of the ills of man for many centuries.

Now, the scientist sweeps all this aside. The uniform experience of pharmacologists is that it is not a heart stimulant, but a depressant; it is neither a tonic to the nervous or muscular structure of the heart; the circulatory system, as a whole, is depressed; and the administration of alcohol for the purpose of stimulating the heart is entirely irrational and useless. These conclusions have been reached by many different observers working independently of each other, and consequently must be accepted as the latest dictum of experimental medicine. Furthermore, its effect on the musculature, as a whole, is depressant. Those who imbibe a moderate quantity of alcohol, are weaker and have less endurance than those who abstain from it.

As a food, the experiments are uniformly confirmatory of Atwater's conclusion: That a large percentage of the drug may be oxidized and thus serve as a source of energy. True, there is an increase destruction of proteid with its combustion, but with a liberal supply of

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nitrogenous food, alcohol may act as a tissue-sparing food. On account of other toxic properties, it should, of course, not be chosen as a source of energy, since foods not possessing this detrimental quality are available.

Pharmacological studies corroborate the clinical value of alcohol as a stomachic. Large doses inhibit digestion and cause intense hyperemia of the gastric mucous membrane, but small doses increase the appetite and the quantity of the digestive fluids. This effect is mostly due to reflex action, and in this respect is similar to other drugs known to stimulate the secretory power of the stomach. The motor power of this organ is also enhanced.

Too little attention has been paid to the narcotic properties of alcohol. The depression of the higher nerve centers in the excitement of the acute infectious diseases is often beneficial. Pharmacologically this is its most rational use. Compared with other remedies its value must be determined by clinical observation. In typhoid fever or pneumonia, for instance, sleep may be induced by a good dose of this drug, and it is for the clinician to determine whether it is better in a given case than chloral or opium.

In recent years, following the teachings of pathology, experiments have been made to determine the effect of alcohol on those processes which overcome intoxications and infections. It was surmised that alcohol may stimulate the formation of antitoxins and alexins. It was suggested that toxins are more or less rendered inert in their activity. But experiments on animals have not corroborated these speculations. It is well known that alcoholics do not bear the onslaught of infections. The high death rate among habitual drinkers from pneumonia, typhoid fever, and other infectious diseases can not be gainsaid. Experiments made by Thomas, Laitinen, Abbott and others, gave the invariable result that the administration of moderate doses of alcohol diminished the resistance of the organism to bacterial invasion. The result was the same, whatever pathogenic micro-organism was chosen in making the test. Even in intestinal infection, Doyen obtained results which would indicate that alcohol favors disease of this tract. Immunity is retarded, and microbic susceptibility is invariably increased.

Experimental therapeutics does not, therefore, offer much encouragement to the employment of alcohol in the acute infectious

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diseases. But the final test is the clinical one; and this test speaks very positively in favor of the drug. How many cases of influenza, common colds, and other mild infections have been aborted by a good dose of whiskey? Many dangerous periods in the course of the acute diseases have been safely passed under the influence of an alcoholic. The same may be said of other narcotics, such as opium and chloral; hence, to be exact, even the clinical experience does not bear out much more than this narcotic effect. The clinical use of alcohol as a heart stimulant must be abandoned.

X-RAY TREATMENT IN MALIGNANT NEOPLASMS.

At a meeting of the New York Academy of Medicine, held March 6, 1902, the subject of x-ray treatment of malignant neoplasms was introduced in a paper read by Dr. Williams, of Boston. The consensus of opinion among the members who discussed the paper was that the x-ray treatment is a valuable addition to our armamentarium for combating malignant new-growths.

Carl Beck (*New York Medical Journal*) recently reported a case of melano sarcoma, apparently cured by prolonged irradiation of the tumor with the Roentgen ray. From various sources, the evidence of the profound influence of the x-rays accumulates. When these are added to the brilliant results obtained by Finsen's method of treating lupus, it is obvious that phototherapy, in its several forms, has become a permanent therapeutic measure. The x-rays have a powerful effect on cell life. This is evidenced by numerous observations on the so-called "x-ray burns." Kienboeck (*Interstate Medical Journal*) has contributed a valuable monograph on this subject. He holds that the reaction of the skin depends on the intensity of the x-ray tube used. No doubt, the state of nutrition of the skin also has something to do with the liability to ulceration. The great peculiarity of these burns is that they do not show themselves until several days, or even weeks, have elapsed. Kienboeck cites an experiment on a pigion which, after a period of two weeks following several exposures to the x-ray, lost all the feathers of its back.

Since this ray has such powerful influence on normal structures, it is but reasonable to assume that a greater distinctive action will be

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manifested on the pathologic tissue of malignant neoplasms. Experiment has shown this to be correct.

Dr. Morton reported several cases of cancer and sarcomata improved and cured by this means. He believed that sarcomata were much more readily destroyed.

Dr. Johnson, after reporting two cases of superficial growths cured, remarked that it was his opinion that by the use of more powerful apparatus it would be possible in the future to attack the deeply-seated new-growths with a fair chance of success.

Coley described two cases of round-celled sarcomata, in which no success was achieved; at the same time he referred to two cases in which the beneficial effect was striking.

Other cases, showing a marked favorable effect, were reported by Allen, Turnure, Hopkins and Piffard, at the New York Academy of Medicine.

From this the conclusion is inevitable that x-ray treatment is markedly effective in lupus, epithelomata, and superficial cancerous and sarcomatous growths. A good effect was also obtained in a case of Hodgkin's diseases. Nor is the beneficial influence limited to the tumor which is placed directly under the radiance; more distant malignant growths, at least in a few cases, have been made to shrink and cease growing.

In regard to the technique, the direction of Williams is that a tube of low resistence should be used for superficial growths. In deep-seated growths, a tube of high resistence is necessary. The tube should be placed in a holder, the inside of which is coated with white lead. By means of a lead screen, the cone of rays is limited to a size a little larger than the diseased area. The exposure should be five or ten minutes at each sitting, and this may be gradually increased to twenty or thirty minutes. These exposures should be given three or more times a week. He believed that there was little danger of burns to the healthy structures, if reasonable care is taken in the exposures.

Kienboeck formulates several methods of x-ray therapy:

1. Daily sittings, with a radiance of slight intensity, lasting five minutes, continued until the first symptoms of a reaction appear.

2. (*a*) Sittings, with a radiance of medium intensity, twice a week until reaction begins to be manifest (about two weeks); (*b*) three

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or four sittings, with a radiance of medium intensity, given on alternate days

3. The "normal exposure" in a single sitting, and await reaction.

Of these the second is the safer and least tedious to patient and physician.

Altogether, the x-ray will serve a most useful purpose, but its practical application will require considerable skill. Harm may result both to the physician and patient by ignorance and carelessness.

ADIPOSIS DOLOROSA.—DERCUM'S DISEASE.

This affection, first described and aptly named by Dr. F X. Dercum, of Philadelphia, is regarded as an abortive form of myxedema by Hutchinson, but its etiology is obscure. Of twenty-four cases reported only four have occurred among men. The fourth case of this series has been lately described by Dercum (*Philadelphia Medical Journal*, March 1, 1902).

The clinical characteristics are the appearance of disseminated masses of fat in the subcutaneous tissues, and the occurrence of spontaneous and paroxysmal pain. Tenderness on pressure is also marked in many cases.

The development of the fatty overgrowth may attain considerable dimensions, but the tumors appear at first as very small nodules, which are often preceded by attacks of paroxysmal painful paroxysms. At a painful spot, it is found that a tumor gradually appears. Tumors or fatty masses grow on the extremities, but are never found on the hands and feet. A uniform obesity never occurs as a result of this fatty overgrowth. These tumors are soft at first, but they gradually acquire a firm consistency, their outline is always distinct. Frequently their lobulation is well marked, or even extremely prominent. Paroxysms of pain is often synchronous with a rapid enlargement of some of the masses.

Different forms of neuroses are often associated with this disease; as parasthesia, hyperesthesia, and anesthesia of certain regions. Dercum and Henry have reported cases associated with epilepsy. There is usually great muscular weakness, diminution, or even suppression of the sweat secretion, and a tendency to hemorrhagic conditions. The thyroid gland has been found atrophic and calcareous in

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a certain number of cases, and its relation to destruction of this gland is shown by the marked amelioration of the symptoms which ensue on the administration of thyroid extract.

The disease is insidious in its onset, and lasts for many years. The asthenia may terminate in a marasmic condition, and the nervous symptoms in marked melancholia. The asthenia and psychic symptoms do not depend directly on the fatty deposits, but are the general expressions of the underlying cause.

TREATMENT OF THE PELVIC EXUDATE.

Infection and a resulting inflammation with sero-fibrinous exudation in the cellular tissue surrounding the uterus is a rather frequent condition which demands the attention of the practitioner. Its extent and severity depends in a great measure on the virulence of the infective organism But it is recognized that 90 to 95 per cent of these cases recover with or without treatment. Like many inflammations, the disease has a natural course, the defensive processes of the body gradually overcome the toxin in the pathogenic bacteria. It is no wonder, therefore, that a great variety of procedures are recommended for its cure. It is perhaps because any form of treatment will at times lead to unsatisfactory results.

The surgical method of incising all forms and draining is not be the most popular method at present. Besides general hygienic and tonic treatment, the local application of ichthyol glycerin seems to be the most common measure employed. In the vast majority of cases it gives very good results. The iodoglycerin mixtures, used with a tampon, are also used by many practitioners. In addition, vaginal irrigations with hot water, aid in stimulating the absorption of the exudate.

Pressure, in various ways, has been brought to bear on the swollen parts, the best known is the mercury colpeurynter. A sand bag has been applied to the abdomen to supply pressure from above.

Special apparatus have been designed to treat the affection by means of hot air. It is said that this treatment is especially efficacious in the very chronic forms. Kehrer and Thomson have recently written on the subject. Pelano has described a special method for its application. It is said that the pain is very much diminished, and the exu-

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date rapidly absorbed. A combination of the various methods is indicated in resistant cases.

SIGNIFICANCE OF THE AROMATIC OXYACIDS IN THE URINE.

The chemistry of the urine is a constant source of surprise to the experimental investigator, and in pathologic conditions new products are constantly discovered. The complexity of this excretion is such that a specialist is required to master the subject, as it has been developed only in the last few years; it is probable that more discoveries will make it still more complex. We have no assurance that the store is exhausted.

Of considerable interest are the so-called oxyacids. They can usually be suspected whenever a urine that is made alkaline or has originally an alkaline reaction, gradually turns brown or black on standing several hours. This is especially true of dioxyphenyl-acetic acid (homogentisinic acid). These acids are related chemically to tyrosin, and the presumption is rational that the oxyacids have their source in this substance. Boedeker described a peculiar reaction in urine which, he supposed, was due to alkapton. Upon the addition of a little ferric chlorid solution, a greenish-blue color appears, which disappears again in a few moments. Fehling's solution is reduced, but Nylander's test is negative. The substance is inactive spectroscopic ally. Various investigators found this reaction, and it was supposed to be due to pyrocatechin and other substances. Baumann and Wolkow were the first to isolate this substance, and it is through their work that it has become generally known.

The origin of this substance is enveloped in obscurity. Like so many foreign substances found in the urine, investigators are prone to attribute its formation to the activity of bacteria, and its source the proteids in the digestive tract. But all investigations on this point have been negative; no acid was formed in cultures of broth or tyrosin-broth infected with the stools of patients afflicted with alakaptonuria. It is necessary, therefore, to seek its source at some other point. It has been observed in connection with many diseases, such as glycosuria, tuberculosis, gastro-enteric diseases, brain tumors, etc. Occasionally it is found in a perfectly healthy person. Another theory

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then has been offered, and that is that it has its origin in perverted katabolism. The fact that tyrosin is found in acute yellow atrophy of the liver, in which disease, metabolism is profoundly changed, suggests that its derivative may find its source in the glands and tissues of the organism.

The aromatic oxyacids must be sharply differentiated from the fatty oxyacids. The oxybutyric acid found in the terminal stages of diabetes mellitus, has probably an entirely different origin as to food constituent, but, nevertheless, is also a product of perverted tissue katabolism.

EDITORIAL COMMENT.

What Constitutes Efficient Vaccination?

At the New York County Medical Association meeting March 17, 1902. Dr. F. S. Fielder read a paper with the above title. He defined efficient vaccination as that which secures to those vaccinated:—The smallest proportion of smallpox cases, the longest duration of immunity, the lowest mortality and the mildest course of the disease when attacked.

It is universally admitted that the number of insertions bears a direct ratio on the immunity. The person with three or more scars is much less liable to contract smallpox than the person with only one scar. The duration of the immunity is difficult to estimate, but it has been shown that it is longer in those presenting multiple vaccine scars.

We are very much in accord with Dr. Austin's views: Vaccination should be done repeatedly until a permanent immunity results. The common belief that vaccination should be done every seven years has no experimental grounds upon which to stand. There is no proof that vaccination produces an immunity of seven years' duration. It is possible to produce local immunity without much general protection. It follows that to produce a really efficient vaccination, the body must be repeatedly vaccinated in different places until a perfect immunity to the vaccine virus is obtained. Any one possessing the slightest susceptibility to vaccine lymph can not be protected. Physicians and nurses especially should be vaccinated repeatedly. not every few years

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but every few months, until an absolute immunity is established. An efficient vaccination is one (or several) which has brought about changes in the organism whereby an immunity to smallpox is produced. It follows that the greater number of lesions and the more virus entering the system the more likelihood that the vaccination was efficient.

Death from Air in the Veins.

The subject of air embolism is resurrected annually and the controversial sides vigorously fortified. Some years ago the surgeon was on the alert for this accident, considering it a very dangerous mishap. Then experiments on animals proved that air embolism in the ordinary size to be entirely inoccuous. Hence the fear was abandoned, and in recent literature very little is found on this accident, although more operations are performed than ever before. Now, Sengler (*Munch. Med. Woch.*) reopens the whole question by the report of a fatal case. A woman, aged 42 years, after spontaneous delivery of her seventh child, suffered severe hemorrhage, and the placenta had to be forcibly separated. Death followed in about half an hour. At the autopsy, air was found in the pulmonary artery and the left ventricle. No doubt these post-mortem findings will be attacked. It is not such an unusual thing to find air in the large blood-vessels after death. The surgeon and the obstetrician will not be very much frightened by this report.

The New Biology of Professor Loeb.

Is physiology on the brink of a revolution? Such seems to be a fact, if the the theory as developed by Prof. Loeb and his pupils receives confirmation and elaboration. At present we regard the source of energy in the living organism as the heat developed from the oxydation of food. At least, this is the common acceptation of the process; but according to the newer biology, heat is only the secondary product. The first and most important life force is electricity. All foods are valuable or worthless in proportion to the electricity that can be generated from them. Hence the inorganic salts are just as important as the higher chemical products; namely, the hydrocarbons and proteids. The ions hold the highest place in this theory. All vital action is only the phenomena induced by the interaction of posi-

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tive and negative ions. Protoplasm, the basis of life substance, has two essential qualities; these are irritbaility and conductibility. These again are changed in their electrical state by external stimuli, a change in the relative position of the ions. Reflex action is the basis of all living activities, and this consists simply of conduction inward and conduction outward. Nerve action is simply electrical action.

While all this is very interesting, and promises much for the future, we feel that speculation is still at the bottom of much of this theory, and a modification of the prevailing theories of physiology is not yet in sight The estimation of foods as to their value in calories, has been found extremly valuable, and harmonizes with all clinical phenomena. The transition of heat to electricity in the body can be admitted. but that the most important element supplied by the food-stuff should be electricity will probably not be received for some time to come.

The Anatomical Factor in the Production of Baldness.

The microbe does not always hold the most important position. Certain anatomical and physiological states must also be considered in the production of disease. Not long since it was suggested that the microbe is the cause of baldness, and the prevalence of dandruff among men pointed out the process by which atrophy of the hair follicles and subsequent baldness developed. But the enigma has always been why baldness should be more common in men, It was suggested that men's hat was responsible for this, since it constricted the blood-vessels of the crown and thereby impeded the circulation of the scalp. It was furthermore suggested that the lack of ventilation of the head may supply a predisposing factor.

Elliott (*Journal American Medical Association*) suggests an anatomic factor in the production of baldness. In examining a number of skulls he was struck by the fact that the parietal foramina were absent, and he reasoned that the emissary veins and the lymphatics would be small, and hence, the return flow of that particular area which is most commonly the first to be bald would have a poor outlet for the return circulation. He has not determined whether this foramen is larger and more frequently present in the skulls of women than in those of men. He believes that a small emissary vein restricts the outflow of waste products and thus contributes to the atrophy of the

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papillæ. The exercise given the scalp in combing the hair when it is long also aids this venous outflow, while the short hair of men is too quickly combed and does not give the scalp the necessary exercise.

Pure Food Legislation in Congress.

The medical world will be very much interested in the bill now before Congress, regulating the sale of adulterated foods. The evidence given before the committees on the method of adulteration will attract wide attention. It is only too true that even the largest and most trustworthy firms are compelled to adulterate food-stuff under the pressure of the keen competition, which is so evident in business circles. The manufacturers will naturally oppose the enactment of this law or the imposition of penalties for its infringement; but injury to business interests should not be the only force which influences our National legislators, and the medical profession should act as a unit in overcoming the influence of manufacturers, who have only personal interests and not the welfare and health of the Nation at heart. It is in such emergencies that a political union of scientists is urgently demanded.

Education of the Blind Deaf-Mute.

Several of the recent periodicals have articles on the education of the deaf-blind. The methods of teaching these unfortunate creatures have been gradually perfected and the results, at least in a few instances, are nothing short of marvelous. That a person with only the sense of touch can become highly educated, understand and discuss even the most profound scientific questions, is something that must be placed among the wonders of modern culture. The extraordinary perseverence required to start a vocabulary must be something sublime. Few mortals are really fitted for this position of teacher. The letters must be taught very gradually by associating simple words with the objects; these words must, of course, be in the manual alphabet, or type cast in high relief. Dr. S. G. Howe, of Boston, was the pioneer in this work, and demonstrated in the education of Laura Bridgman that a deaf-blind could be educated, although all the medical and scientific authorities at that time denied the possibility.

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DIAGNOSTICS.

In Charge of A. LEVY, M.D.

Tuberculous Pleurisy.

Dieulafoy (*Semaine Med.*) discusses the very interesting subject of tuberculous pleurisy from the standpoint of diagnosis. The importance of determining whether an acute serofibrinous pleurisy is, or is not, tuberculous is evident; for both prognosis as to future health and the present treatment must depend on this. The author regards the examination of the pleural fluid necessary. If an abundance of lymphocytes, red cells, and an absence of endothelial cells are found in the fluid, it must be regarded as tuberculous; the proper antituberculous treatment should then be instituted

Cysts of the Mesentery.

Blum (*Wiener Klin. Woch.*) considers the difficulty in diagnosing a cyst of the mesentery. He reports a case in a young girl, who had been constipated for several days and suffered from abdominal pain and vomiting; she had a similar attack one year before. The abdomen was swollen and a tumor was palpable in the right hypochondrium. Laparotomy revealed a large cyst of the mesentery and volvulus of the small intestine.

"Stammering" Bladder and Urethra.

The condition which produces a difficulty in micturition in young males when observed or when surrounded by unusual objects, has been called "stammering" bladder and urethra by James Paget. It is due to a functional spasm of the compresser urethræ muscle. As a rule, it has little significance; in severe cases division of this muscle gives relief.

Cervical Rib.

While the cervical rib in the vast majority of cases gives rise to no symptoms, the studies of Küster and Pilling have shown that in 5 to 10 per cent of the cases marked local or general disturbances may arise. Bouchard reported four cases from von Bergmann's clinic, which presented symptoms. These were: Severe pain in the right arm; crawling sensation in the left arm; pain in the right arm, breast and back; pain in the back of the neck and paresthesia of arm. In

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many cases general nervous symptoms are present. The close proximity of the subclavian artery may cause circulatory disturbances. Syringomyelia is very frequently found in patients with a cervical rib.

Piorkowski's Method.

Piorkowski's method in the bacteriological diagnosis of typhoid fever is as follows: Normal human urine of a specific gravity of 1020 is allowed to become alkaline spontaneously; is peptonized with one-half per cent peptone; is treated with 33 per cent gelatin, by boiling over a water bath for an hour; is filtered without the addition of heat, and poured out into test tubes. It is then sterilized at 100°C. for 15 minutes and on the next day for 10 minutes. In this medium colonies of typhoid bacilli may be differentiated in 20 hours from those of the bacillus coli by the presence of long processes in the periphery of the colonies. The urine should be taken from individuals who have been under a vegetable diet.—*N. Y. Med. Jour.*

A New Diagnostic Point in Typhoid Fever.

Gibbes (*Brit. Med. Jour.*) claims that the eruption of typhoid fever, like that of smallpox, may be seen on a photographic plate before it is visible on the skin. Hence, in suspected cases a photograph of the abdomen should be made; careful development of the negative may show the characteristic spots.

Hay's Reaction for Bile Salts.

This reaction seems to have some value, and may be used to corroborate Pettenkofer's test. About one inch of urine, which must be at a temperature of 60°F., is placed in a test tube and some finely-powdered sulphur is thrown on the top. If the sulphur begins to fall at once or after a few moments, the test tube being slightly shaken, bile salts are present. In normal urine the sulphur floats on top for some time unless the specimen is very warm. The reaction depends on the fact that bile salts lower the surface tension. It is a very delicate test.

Uterine Carcinoma.

Abel (*Arch. of Gyn.*) claims to have discovered a new method of differentiating cancerous from other cells in studying uterine scrapings. Pathologists have great difficulty in diagnosing cancer from a piece of the cervix, and if his method is corroborated it may prove a great aid

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in diagnosis. The tissue is stained with Weigert's resorcin-fuchsin stain, and with a high power elastic fibers are sought surrounding and among the cancerous nests. This is observed only in carcinomatous growths.

Appendicitis and Tubo-Ovarian Disease.

Diseases of the adnexa and appendicitis are frequently mistaken one for the other. Kansen gives differential signs which may prove very useful at times.

In appendicitis the patient has been well, in tubo-ovarian disease there is a history of vagino-uterine infection. In the first disease the onset of pain is sudden and often sharply localized; in the second the onset is gradual and the pain is dull and radiating. In the former, rigidity of muscles is marked; in the latter there is no rigidity. Inflammatory mass is not found for several days in appendicitis; it is usually found at once on vaginal examination in pelvic disease.

Agglutination of the Tubercle Bacilli.

Koch has succeeded in improving the method of Arloing in producing agglutination of tubercle bacilli. He has obtained a serum which possesses agglutinative power in a dilution of 1 to 3000. As a diagnostic test he has found this reaction of no value, and still believes that the tuberculin reaction is the best means for detecting the presence of tuberculosis.

Congenital Laryngeal Stridor.

Leon Cerf (*Arch. de Med. d. Enf.*) describes the noisy inspiration sometimes heard in young infants as a congenital laryngeal stridor. Sometimes cyanosis and dyspnea accompany the stridor, but, as a rule, it is not a serious symptom. This noisy inspiration is due to a variety of conditions, among which malformations of the larynx or epiglottis, laryngitis, enlarged bronchial glands, enlarged thymus, and adenoids may be mentioned.

Bradycardia.

A very slow pulse, following diphtheria, is usually given as a very grave prognostic sign. It is stated that cardiac failure is imminent, and patients rarely recover. But Bardier recently reported three cases with marked slowness of the heart, but without other signs of functional disorder, which recovered very promptly.

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Bradycardia is a very common symptom in childhood, after any acute infectious diseases. It is found after measles, influenza and pneumonia; in itself it should not be considered a grave symptom.

Method for Detecting Fat in the Blood.

The presence of lipemia can be established by a quantitative examination of the blood, but this is almost impossible in practice since such a large quantity of blood is required. Zandy (*Deutsch. Arch. f. Klin. Med.; Medical Age*) recommends a very simple method: The finger is cleansed with alcohol and ether. After pricking the finger, the drop is caught on a cover-glass ringed with vaselin; this is placed on a slide. When normal blood is used, after a few minutes, a clear fluid is seen surrounding the disc, but in lipemia this ring becomes turbid and has a milky-white hue.

Symptoms of Brain Tumor.

The principal symptoms of a growth within the skull are headache, general and localized convulsions, mental impairment, choked optic disc, vomiting, and vertigo. The subsidiary symptoms which serve as an aid to diagnosis are: Fluctuations in temperature and modifications of the urine (albuminuria, glycosuria, polyuria, or scanty urine); insomnia, delirium, stupor, and coma appear in the late stages.—Church, *Chicago Medical Record.*

THERAPEUTICS.

In Charge of W. L. JOHNSON, M.D.

Influence of Water Upon Health and Longevity.

Wood (*Sanitarian*, January 1902) regards long life as desirable only in proportion to the perfection, development and happiness attained by, and usefulness of, that life. The general usefulness of water is then dealt with, internal cleanliness being maintained by *pure* water. Many authorities are quoted as to its value in eliminating waste products. Great stress is laid upon the drinking of *pure* water, thus avoiding typhoid, cholera and other water borne diseases. City water supplies are unsafe; boiled water is even more impure-save for

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the destruction of *some* disease germs; the domestic filter is dangerous.

Hard and mineral waters are causes of the conditions leading to old age. The purest spring waters are those which come nearest in analysis to distilled water; the presence of organic and inorganic impurities in the spring waters sold in this (New York) and other cities is a matter which demands the serious consideration of the boards of health of such cities. Distilled water is of great value, aside from its purity, by its great solvent power. Nature's distilled water, in the form of rain percolates through the earth and absorbs various organic and inorganic substances, thus rendering it impure. Distilled water beautifies the complexion and gives great elasticity and flexibility to the muscular economy. Distilled water should be used in cooking. The only way to avoid pollution is to keep the water sheds which gather the water used entirely in a state of nature, that is, free from cultivation and population. This may come in the next generation but hardly in this.

Treatment of Typhoid.

Boggess (*American Practitioner and News*, February 1, 1902) believes more harm comes of underfeeding than by sensible and rational overfeeding. He has discarded almost entirely sweet milk, having a preference for butter milk, which assists in overcoming kidney incompetence, helps the kidneys to eliminate the toxins as well as the effete and toxic tissue metabolisms. Moreover, it does not furnish any pabulum for the bacillus typhosus, as does sweet milk. Raw eggs are given, nutritious soups, sometimes fruit jellies and gelatine, etc. Large quantities of good, pure sterile water is a rule sometimes overlooked.

Use of Antidiphtheritic Serum in the Treatment of Sepsis.

D. Montgomery Paton (*Therapeutic Gazette*, February, 1902) seems to think he has a specific for staphylococcic and streptococcic infections in giving 750 units of antidiphtheritic serum suspended in mucilage of tragacanth every six to eight hours by the mouth. His results and those of his colleagues have been uniformly good. Erysipelas, puerperal infection, appendicitis, broncho-pneumonia, etc., are all thus treated. He has used over 8,000,000 units in the past three and a half years. The serum may be digested by the digestive organs but the antitoxin is not. Even the serum must at times be absorbed, as he has now and again seen the characteristic rashes. Antidiphthe-

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ritic serum is specific for diphtheria, hypodermically, and specific for sepsis orally.

His formula: Diphtheria antitoxin, 3000 units; mucilage tragacanth, carmin, qs.; water, qs. ad .2 ounces. Dose usually half ounce every six hours, or night and morning.

[In mixed infections it would be well to give the serum both by the mouth and hypodermically, if the above is at all trustworthy.]

Creosote in Pneumonia.

Van Zandt (*Medicus*, February, 1902) is and has been an advocate of this treatment and urges its value in doses of 7½ grains or minims every three hours. Ordinarily he uses the carbonate of creosote. Expectorants or nauseants are never used; an anodyne occasionally, and strychnia where indicated. The medicine must not be omitted as soon as active symptoms have subsided else there will surely be a return.

Therapeutic Notes.

Fussell (*Penn. Med. Jour.*, December, 1901) calls attention to the value of tincture of iron in acute rheumatism; large doses of ipecac in epidemic dysentery; bichloride of mercury, 1 grain to 1 ounce of lime water, for application in rhus poisoning; mercurial ointment in pruritis ani; nitric acid as a caustic application to the os uteri; calomel as a local application in skin diseases, and large doses internally in membranous croup; large doses of nitro-muriatic acid in functional inactivity of the liver.

Should We Use Heart Stimulants in Acute Diseases?

Schreiman (*Merck's Archives*, February, 1902) takes issue with Jacobi on this question and not referring to shock, paralysis or faulty innervation, says the whole subject of heart stimulation, with the object of supporting the heart in disease where heart failure is apt to supervene resolves itself into physics—mechanical physics. He does not believe that heart failure will occur as long as there resides sufficient energy within the organ to enable it to beat or functionate; or, in other words, the heart will not fail so long as there is sufficient energy within the heart to do the work. By energy or force he means ability to do work.

How do some stimulants act? Take digitalis, it contracts periph-

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eral vessels and so brings about an increased blood pressure, thereby throwing more work upon the heart. Other stimulants increase the action of the heart thereby causing more rapid consumption of energy. Except alcohol, they do nothing in return, that is, they do not increase the appetite, nor aid digestion, absorption or assimilation.

Do heart tonics support the heart and thereby guard against heart failure? It is a maxim in physics that where work has been done, energy has been consumed. They increase both work and consumption of energy and in consequence hasten the exhaustion of the heart. Heart stimulants do not lessen the amount of work, do not lessen the volume of blood, nor do they supply nutritive pabulum.

The fact that clinically there are apparently good results only goes to show that there was energy which could be whipped into action. The homeopaths have as good or better results in pneumonia, compared with ours, and they do not stimulate in pneumonia.

Suprarenal Capsule in Hemorrhages.

Florsheim (*Medical News*, January 4, 1902) reports 45 cases of hemorrhage of different varieties treated by internal administration of the suprarenal substance; 21 were cases of hemoptysis, 23 of uterine hemorrhages from various causes. The suprarenal powder, 5 grains, placed on the tongue, thoroughly rinsed with saliva and swallowed without water usually produced an effect in ten minutes.

Therapeutic Reminders.

Remember the value of arsenic in chronic skin affections not especially active.

The iodides are vaso-dilators and in chronic myocarditis and endarteritis have a favorable influence.

The iodides and other drugs, not otherwise tolerated by the stomache, when given in essence of pepsin and further diluted, often cease irritating the mucous membrane of the stomach.

When we remember the value of mercury in syphilis, of digitalis in some heart lesions, of quinine in malaria, of iron in chlorosis, of morphin in pain, of cocain as a local anesthetic, of diphtheria antitoxin in diphtheria, of the salicylates in rheumatism, ergot in post-partum hemorrhage, and many another nearly specific medicine we are not quite justified in being therapeutic nihilists. The physician who has *no faith* in drugs is usually the one who does not know how and when

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to use them. On the other hand, a blind faith in the use or abuse of drugs is equally deplorable, and while the association of medicine is, when well directed, valuable, the mixing of a number blindly or vaguely bespeaks lack of accurate diagnosis and therapeutic accuracy.

While we must listen attentively to science we must not disregard accurate observation. For a time iron was tabooed on apparently scientific grounds, but her judgment by scientific experiments has been reversed, and clinically and experimentally iron is *now* absorbed.

Some Prescriptions of Iron.

℞ Syr. ferri iodidi..... ℥j

Sig.—Five to thirty drops in water after meals.

Indications: Tuberculous diathesis, adenoids, syphilis, anemia of children and enuresis Especially valuable in chronic respiratory disturbances of infants and children.

℞ Ferri et potassii tartrat..... ʒij–iv
Syr. simplec et aquæ.....*aa* ℥iij

M. Sig.—One dram in water after meals.

An excellent method of giving iron, not constipating, but slightly astringent, and the least disagreeable in taste.

Indication: As a chalybeate tonic, especially in the young; in the heart diseases—as mitral stenosis with anemia and emaciation, this is an adjuvant of considerable importance

For chlorosis:

℞ Pilulæ ferri carbonatis (Blaud's pill).

Sig.—One after meals with small doses of extract cascara sagrada, grain one-half in each pill, is practically a specific. Or:

℞ Mist. ferri composita (Griffith's mixture).

Sig.—Two to three drams after meals diluted, with a little aromatic cascara incorporated in it, is a desirable formula where the pills are objectionable.

℞ Vini ferri citratis.

Sig.—One to two dram in water after meals. A good preparation of iron, being bland and not unpleasant.

℞ Tinct. ferri chloridi.

Sig.—Five to thirty drops in water. Especially desirous when lack of appetite; used in erysipelas, scarlet fever, acute rheumatism, and by many thought to be the best ferruginous tonic extant.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of February 6, 1902; Dr. Given Campbell, Jr., President, in the Chair.

Carcinoma of the Liver.

Dr. GRADWOHL presented this specimen. The liver was of great size, with large nodules. The stomach and esophagus were also involved, the esophagus for about one-third of its length showing ulceration and nodules. No microscopic examination had as yet been made, but the condition was probably carcinoma. The metastastic growths were found in the right lung, and in the extreme right side of the liver. The patient came to the hospital a month ago, with a history of carcinoma. He was willing to undergo an operation, but the case was inoperable.

Dr. RASSIEUR presented the following specimens:

Carcinoma of the Stomach.

The entire stomach wall was thickened, in some places almost one-half of an inch.

Aneurysm, with Aortic Insufficiency.

The case was diagnosed aortic insufficiency, and all the clinical signs pointed to this diagnosis. Post-mortem it was found that this was a fact, but there was a large aneurysm at the beginning of the aorta. The immediate cause of death was acute cardiac dilatation.

Case of Graves' Disease.

Dr. CARTER presented a patient with the following history: The patient is over 45 years of age, a Pullman conductor by occupation. He has been in several railroad wrecks. He was first seen by me last fall. Up to two years ago he was robust, healthy and vigorous. He was addicted to cigarette smoking to great excess. When I saw him his pulse was 130, and I believed he was suffering from the effects of

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nicotine poisoning. Patient was told to rest, and given a light sedative. The condition did not improve, and he was kept at home and put on digitalis, strophanthus, and sedatives. In abount six or eight weeks I found he was suffering with typical Graves' disease. The condition was peculiar, the pulse varying from 100 to 130; there was a distinct stenotic murmur over the mitral area, together with a systolic murmur along the left side of the sternum. The mitral murmur disappeared, the area of heart dulness was small. There was a rather indistinct systolic blowing murmer on the left side which, together with marked abdominal pulsation accompanied with a loud bruit, suggested the possibility of an aneurysm of the descending aorta.

In the treatment I first tried the iodids, and the patient did remarkably well for a time, but suddenly he dropped back to where he was in the beginning. A peculiar feature of the symptoms was the behavior of the eye. When the heart was down to 85, the eye symptoms were worse; when the pulse was above 85, the eye symptoms receded.

Dr. L. H. BEHRENS and Dr. L. RASSIEUR presented a paper (see report of cases, this issue, page 338) on

Valvular Lesions of the Heart.

Dr. BEHRENS showed some sphymographs, and said in the case of Williams there was a high percussion wave, and then a tidal wave showing a rebound, then a dicrotic wave in contradistinction to the normal. The two pulses show the same lesion and the heart muscle is weak, the arterial system tending to the atheromatous state.

In the case of aortic regurgitation, the sphymograph shows a typical aortic regurgitation pulse. After the secondary wave there is a marked recoil.

The next case, one of aneurysm, is typical. The difference in the pulses is not so marked, as the tumefaction in the breast might lead us to expect. On the right side the pulse is small, and entirely different on the left side. This difference is not very apparent to the hand, but the sphygmograph shows a very marked tidal wave and a dicrotic wave more or less marked. The heart is fairly strong, but not as tumultuous as we usually see in an aneurysm of this size.

The sphygmograph is not, to say, a necessary instrument in aiding us, because we can usually tell what the condition is by the clinical

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signs, but it does show the deficiency in the heart muscle or artery, and often the location of the lesion.

Speaking of the specimen of aneurysm exhibited, he said it could be readily understood why a diagnosis of simple aortic regurgitation had been made, overlooking the aneurysm. The walls of the aneurysm are very thin, and it looks like one of recent occurrence. It is not large enough to impinge upon the lung substance. The lungs were emphysematous, so all that was heard on auscultation was the regurgitant murmur. Percussion gave but little information.

DISCUSSION.

Dr. ELSWORTH SMITH said that in the diagnosis of aortic regurgitation we should always be careful not to overlook thoracic aneurysm, for the two conditions are so often combined. The question should always be: Have we to do with a simple dilatation of the aorta, or whether there be actually an aneurysmal tumor? Of course this will be determined largely by the presence or absence of pressure symptoms, which usually arise from pressure of the tumor on the contiguous organs—by evidence of a tumor, tracheal tugging, etc. In his experience, thoracic aneurysm, unaccompanied by aortic regurgitation, does not give rise to the Corrigan pulse. The physical conditions necessary for the production of the Corrigan phenomenon can only be a leak in the aortic valves.

We should be careful, too, in making a diagnosis of aortic stenosis; for every systolic murmur in the aortic area does not mean that there is an aortic stenosis. We must look to the vessels to determine if there be a narrowing, hecause the murmur may be due to a simple roughening of the arteries. If we have a comparatively small, slow pulse with an aortic systolic murmur, we can feel pretty certain that there is a narrowing of the aorta. Again, if we have a diastolic murmur and also a systolic murmur at aortic opening, and are to make a diagnosis of aortic obstruction, we must also first study the vessels. We must see if the Corrigan phenomena are modified, and if found to be so that it is evidence of an aortic stenotic lesion. For if the artery be narrowed, this will interfere with the production of the Corrigan phenomena, by preventing the ventricle from suddenly throwing its abnormally large amount of blood into the aorta, and thus suddenly raising arterial tension, while preventing also a great leakage into ventricle during diastole, and thereby the sudden drop in blood

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pressure—the two causative factors of the Corrigan phenomena. These points were exemplified in the last two cases shown. Both these patients have a double aortic murmur—one has a slower pulse than the other, and the Corrigan phenomena less pronounced. Therefore, aortic norrowing is present in this case; the other, having marked Corrigan phenomena, with no slowing of pulse rate, speaks rather for simple roughening of aortic opening.

In the treatment of Graves' disease, he said patients may improve on the iodids, especially if there is a specific basis. He has two cases under observation which did remarkably well on strophanthus and belladonna, the latter given to its physiological effect—after the method advocated by E. G. Janeway, of New York.

Dr. ORR asked if the thyroid extract had been abandoned in the treatment of heart cases. He also asked if cases are often seen in practice where there is an absence of the conditions seen in degeneration of the myocardium, and yet the clinical signs point to some cardiac insufficiency without murmur, and we are unable to determine if the heart leaks, but the patient suddenly dies. In a certain case he had treated, the patient had no valvular disease proper, but the patient, after having gone from one physician to anther, suddenly died with symptoms of serious heart trouble.

Dr. GREEN, JR. had observed a case of Graves' disease in a robust young colored woman. She presented practically all the symptoms of the disease—exophthalmus, enlarged thyroid, rapid pulse, great nervousness and muscular weakness. The glycerophosphate of soda was given for four or five months, but not with great regularity, as the patient was hard to control. The symptoms, however, ameliorated, and when last seen, about three months ago, the exophthalmus was much diminished, the pulse 80, regular and strong, and the gland decreased in size. He did not ascribe the improvement wholly to the glycerophosphate of soda, but thought this might be one of those fortunate cases that improve sponstaneously.

THE PRESIDENT, in discussing the case of exophthalmic goiter, said that Horsley and others had proved that by injecting thyroid juice into the circulation, practically all symptoms found in Graves' disease could be produced. It was further known that in this disease the primary and principal changes found in the patient's thyroid gland were such as would be accounted for by an increased physiological

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activity of that organ. During the exacerbations of the disease the gland passed into a condition resembling erection, and there was every reason to believe that the various symptoms were largely, if not entirely, due to the presence in the blood of an increased amount of this internal secretion.

He considered, however, that the underlying cause of this hypersecretion depended on the nervous system. It is well known that the nervous tissues require for their right functionating a certain proper amount of this thyroid secretion. If this amount be excessive, there is nervousness and nervous over-action; if the secretion be diminished in amount, there is sluggishness of nervous action, such as we find in myxedema. During periods of nervous strain, worry, anxiety or grief, there is a physiologic call made by the nervous system for an increased amount of this secretion. In certain individuals this call is responded to by the thyroid gland, in excess of the required amount. This excess above the amount needed causes an increased irritability in the nervous system, a more ready reaction to worry, grief, etc., and a still greater call on the already over-worked and over-irritable thyroid gland; and thus a vicious circle is established, making the nervous system constantly more irritable, and the thyroid more ready to pour fourth its already too abundant secretion on slighter and slighter provocation.

The treatment, as may be readily inferred, rests upon the fulfillment of too conditions: (1) To reduce to a minimum all causes of nervous irritability, shield the patient from all mental over-work and emotional trauma, and thus reduce the call that the nervous system is making on the thyroid gland. (2) To combat the influence on nerve irritability that is being exerted by the excess of the thyroid secretion in the circulation. And how may this be accomplished? It is a known fact that the injection into the system of the products of the suprarenal gland produces a train of symptoms, which are in most respects the exact opposite of those produced by thyroid secretion. That in suprarenal extract we have an almost perfect physiological antagonist to thyroid secretion. The various symptoms due to the excess of this thyroid internal secretion can be met and controlled more perfectly by suprarenal extract than in any other way.

He had had occasion to make use of this treatment in four cases of Graves' disease, and the relief had in each instance been prompt and decided, being manifested in all the symptoms.

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Dr. LIPPMANN had used the adrenalin chlorid in a case of valvular disease of the heart. The pulse was reduced from 120 to 84, and the patient did well. He also tried it in a case of chlorosis. The murmur disappeared, the pulse went down, and the patient felt better generally. Since that time he has tried it in a number of valvular cases, and noticed improvement in all of them.

Dr. CARTER said the age and sex of his patient made the case a little peculiar. Graves' disease is generally seen in young women. After the age of 38 the disease is rare The course of the case is somewhat peculiar under treatment. When first seen, the only phenomena were the tremor and the rapid pulse. This, in connection with the number of cigarettes smoked, he felt justified the diagnosis of tobacco heart. He had been treated with digitalis alone and in combination with strophanthus, and strophanthus alone, with and without antisyphilitic treatment. The only improvement was under the iodid of potassium, in doses varying from 15 to 45 grains three times a day; its action, however, was not constant. The administration of sodium salicylate had produced no effect, except disordering the stomach It is purposed to put the patient on adrenalin, the results of which were to be reported to the Society later.

Dr. NIETERT said the gelatin treatment of aneurysm had been used in five cases some years ago. The cases were selected, only those being placed on the treatment where the size, expansibility and pulsation of the tumor could be observed. All the cases except one died. Post-mortem showed large organized clots in the aneurysm, one clot two inches thick. Under this treatment the sac would seem to stop growing in the direction it had been following, and extend in another direction. In a case now under treatment, they had introduced 22 feet of silver wire, and combined this with the gelatin treatment. The pulsation is less, and one portion of the tumor has decreased in size, but is increasing in another direction.

Meeting of February 20, 1902; Dr. Given Campbell, Jr., President, in the Chair.

Fibroma Uteri.

Dr. REDER presented this specimen; it was taken from a woman, aged 36 years. Removal of the tumor became imperative, not on ac-

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count of any untoward symptoms—such as pressure, pain or discomfort from pressure on neighboring organs, but from the development of the pathological condition known as brown atrophy. She carried the tumor twelve years, but was in excellent health until six months ago when there was a rapid growth of the tumor and symptoms of syncope. The tumor occupied a rather peculiar site on the uterus, looking like a hat upon a head. The blood-vessels were woven about it like the network on a balloon. In making the amputation he permitted the cervix to remain, taking out the uterus and its appendages.

During the operation an unfortunate accident occurred which, happily, had no bearing on the outcome of the case, as the woman recovered. He placed a tenaculum in the anterior fornix and one in the posterior fornix in order to guide the sense of touch, as the field was obscured by the hemorrhage. In introducing this instrument he placed the woman in the lithotomy position and then had her placed in the Trendelenberg position. When he entered the abdominal cavity he found the point of the tenaculum had penetrated the anterior wall of the vagina and passed on through the posterior wall of the bladder. He did not drain the bladder but catheterized the patient for eight days. The patient made a good recovery.

DISCUSSION.

Dr. EHRENFEST thought from a superficial inspection of the specimen it may seem that the uterus could have been saved as the tumor was isolated from that organ, but a closer examination shows that the uterine wall contains a number of small myomata. The present hardness of the specimen, having been kept in formalin solution, makes it difficult to feel these small myomata in the wall, but their existence was no doubt discovered at the time of operation and caused the Doctor to excise the uterus. The tendency at present is, if possible, to save the uterus and limit the operation to the extirpation of the myomata. It is advisable to save a part of the uterus, or at least some part of the endometrium, in cases where the ovaries are preserved, because that guarantees menstruation and saves the woman the trouble often accompanying artificial menopause.

Dr. REDER said he had not attempted any drainage whatever, simply depending upon washing out the cavity with saline solution and closing the abdominal wound. On the fifth day the gauze in the vagina

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was removed dry, showing the anterior opening had almost closed. A complication encountered was the adhesion of the rectum.

Dr. H. L. NIETERT read a (see page 321, this issue) on the

Surgery of the Heart.

DISCUSSION.

Dr. SHARPE, in opening the discussion, said the subject of wounds of the heart was not a recent one. As far back as Hippocrates and Celsus we have, in the literature of the day, mention of wounds of the heart with the additional information that the result was invariably fatal. Later on Paul, Roland, and Laufrance also mentioned wounds of the heart, with the same uniformity of result. This uniformity of result and also the opinion that cardiac traumata were of necessity fatal, was held until the beginning of the Sixteenth Century, at which time closer investigation showed that there were cases, now and then, in which there was strong presumptive evidence of a wound of the heart having taken place and yet the patient had survived. Records of such appear in the literature. Coming down to comparatively recent years, it may be of interest to take cognizance of the thought of some of the masters in surgery.

It is claimed that Erichson, during his visit to Philadelphia in 1874, stated that "surgery had attained its highest plane and reached its limit of usefulness, and nothing in the way of advance or improvement need be looked for except in detail and technique."

Reidinger, in 1884: "The proposition to suture a wound of the heart, although made in all seriousness, needs hardly a mention."

Tillmann in a recent edition of his "Surgery," says: 'Surgery is powerless when confronted with hemorrhage from the heart muscle."

Billroth is reported to have advanced the thought that "no surgeon who wished to preserve the respect of his colleagues would ever attempt the suture of a wound of the heart."

He took pleasure in saying that the literature recorded two English-speaking surgeons who had operated on perforating wounds of the heart, of which Dr. Nietert was the first and Dr. George Tully Vaughan second. *Both Americans.*

Rosenthal (*Deutsche Med. Woch.*, 1895, No. 2) was probably the first to attempt the suture of the animal heart. In 1895 he

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presented a dog to the Medical Society of Berlin upon whom he had resected the sternum and wounded the heart and then tamponed it with iodoform gauze. The wound had healed and the dog survived.

Del Vecchio (*Riforma Med.*, 1895, II, No. 79; *Central. f. Chir.*, 1895, page 574) reported the case of a dog upon which he had made two perforating wounds of the left ventricle, had sutured and the dog lived.

Solomon (*Central. f. Chir.*, 1896, No. 51) reported two dogs that he had wounded in the heart, had sutured and the dogs lived.

Bode (*Beit. zur Klin. Chir.*, 1897, XIX, 167) reported a series of experiments in which he had wounded the ventricles in rabbits, and had repaired with fine silk with successful results.

Hill (*Medical Record.*, December 15, 1900) after an excellent résumé of the literature observed that the right ventricle is most frequently wounded, the left auricle least frequently wounded; auricular wounds are more fatal than ventricular, and wounds occurring when the heart is in diastole are more dangerous than those received during systole.

In considering the operative technique of surgery of the heart he suggested that it might be interesting to dwell a moment upon the flaps and incisions employed by different men. There are a few anatomical facts we should bear in mind. He ventured the prediction that surgery of the heart would be bound down and guided by anatomical facts, in all probability, as rigidly as any operative procedure upon the human economy. He mentioned that both the position and size of the heart were subject to variation. The base of the heart being directed upward, backward and to the right, and the apex downward, forward and to the left, though the angle of inclination varies and the size of the heart varies; yet it is manifest that wounds of the heart would ordinarily be found in the lower segment, and chiefly in that portion approximatiog the anterior thoracic wall. He is now engaged in making some investigations upon the relations of the heart and mediastinal boundaries upon the anterior thoracic wall, and was impressed with the fact that the area of the mediastinal space is not fixed in many of our anatomies. He had looked back over the text-books of a century and had found that the estimates of those who have been considered classic in their authority varied widely and were not accurate. He had not completed the search in the more recent authorities but in

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such that he had, possibly the most accurate description is in Morris' text-book, edition of 1899, which give the following data concerning the anterior mediastinal space:

"The anterior mediastinal space is narrow above, lying behind the sternum opposite the 2d, 3d and 4th cartilages; below it opens out into a quadrangular space having nearly the whole of the lower half of the sternum, the lower edge of the 4th, 5th, part of the 6th and termination of the 7th cartilages of the left side with the triangularis sterni muscle in front. The pericardium forms its posterior wall. It corresponds to the area of cardiac dulness."

It is manifestly vital that we should have an accurate knowledge of this area, through which we may attack the heart with a reasonable degree of assurance of not affecting the pleural cavity and thus complicating certain cases.

There are now a number of cases on record in which there is fairly tangible evidence that individuals have been wounded seriously in the heart and yet survived. The latest is recorded by Mastin in the "Transactions of the American Surgical Association," 1900, in which he reports that a man was shot in the back with a 38 caliber Winchester ball; this penetrated the thoracic cavity and emerged anteriorly. If we are justified in depending upon the general average of anatomical measurements, Mastin's deductions are correct; in which case we are forced to the conclusion that this individual had not only the left but the right ventricle penetrated. Practically nothing was done in the way of treatment—the patient was given sedatives, put to bed and recovered. There are other cases on record quite as interesting.

The experimentation of Elsberg recorded in the *Journal of Experimental Medicine*, 1899, is of the most reliable character, and will prove substantial foundation stones upon which to construct cardiac surgery. Among other facts adverted to by Dr. Nietert, developed by Elsberg, and which the speaker desired to emphasize, is that the interrupted suture, because it incloses a smaller amount of tissue, is preferable. Elsberg also states that sutures which penetrate deeply into the cardiac tissue favor structural degeneration within their grasp and subsequent rupture. The more superficial the grasp the more satisfactory is the ultimate result, and if this superficially-placed suture be inserted during diastole the operation gives surprisingly good results. Strain upon the heart is both immediately and remotely demonstrably less by

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the diastolic suture, as contrasted with a suture passed during systole.

He thought it might be interesting to exhibit some of the flaps and incisions that have been made in this operation. Surgery of the heart is so markedly in its infancy that no incisions nor flaps are, as yet, absolutely classic. Such flaps as are shown by the literature have been made by operators on the spur of the moment to meet the real or fancied necessities of the individual case.

The largest flap recorded was made by Parozanni. The individual had been wounded in the 7th interspace on the left side well over —beyond, the anterior axillary line. In order to expose the heart, Parazanni observed the sound surgical rule of following down the track of the wound. To secure an advantageous aperture, he was obliged to make an incision, which started in the left 4th interspace one and a quarter inches from the sternum, going outward five and a half inches from which he dropped a vertical line to the superior margin of the 9th rib, and from that over to within one and a quarter inches of the sternum. He then turned inward this flap, breaking at the cartilage, as on a hinge. The ribs cut were the 5th, 6th, 7th and 8th. The left ventricle was found wounded, was stitched and the patient recovered.

Dr. Sharpe then presented a number of specimens taken from cadavers, consisting of the anterior thoracic wall together with the heart and beginning of the large vessels in position, upon which he had performed the more valuable of the current lines of incision.

The first flap was demonstrated from the anterior thoracic wall of a woman. The lines of incision are wholly on the left side and outlines what is known as the "Rotter flap." Incise at the 2d interspace about two inches to the left of the sternum and run two inches outward, then down to the 5th interspace; the second incision is made running out the same distance in the 5th interspace. The perpendicular incision unites the terminal ends of the first and second incisions. The flap turns on the inner side. He demonstrated that a wound made in the right ventricle could be grasped by the forceps and the heart brought up into the aperture either by forceps or the finger of an assistant put in behind under the apex (as was done in Dr. Nietert's case). This flap is of service for intrapleural attack. The next flap is made on the right side; this was originated with Watten, the wound having occurred in this case in the 4th interspace on the right side. The first incision starts in the 2d interspace at the right side of the

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sternum and extends two to three inches to the right; in the 4th interspace a similar incision is made and the two incisions united by a vertical one at the sternal end through the cartilages and the flap turned to the right, the ribs having been fractured. In this particular case Dr. Sharpe pointed out that the heart was found shifted, having assumed a position more nearly vertical than is usually found, so that comparatively little of it could be seen through the aperture. Such a condition occurring in actual practice, he would suggest that it would be necessary to saw through the sternum in continuation of the horizontal incisions, and so enlarge the aperture.

The next flap shown was the "Nietert flap. This is utilized in an extrapleural attack. The first incision starts at the lower border of the cartilage of the right 3d rib, runs toward the sternum to within an inch of the left side of the sternum. A similar incision is made at the level of the sterno-xiphoid articulation. The third incision unites the left extremities of the two incisions. This flap can be turned to the right with comparative ease, fracturing the cartilages on the right side. In this particular specimen the cartilages were ossified, and what actua'ly occurred was a disarticulation of the ossified cartilage at the right chondro-sternal line.

The last specimen shown was the flap utilized by the other American operator, George Tully Vaughan. The incision starts at the upper border of the left 4th rib, extending to the lower border of the left 5th rib, along the sternal edge. (Vaughan's case presented a stab wound five cm. long, completely severing the cartilage of the 5th rib). A similar incision is made, starting approximately an inch external to the cartilage of the 4th rib tending downward cutting the 4th and 5th ribs; the inferior extremities of the two incisions are now united. In the Vaughan flap the flap hinges upward; all the other flaps turn either externally or internally.

Dr. Sharpe expressed regret that lack of time and scarcity of suitable material prevented a demonstration of other flaps. These shown, however, were the most valuable from a surgical standpoint.

Manipulation of the heart during operation has proven to be a comparatively simple matter. The heart may be lifted up by an assistant, or by forceps, or by traction after the first suture has been inserted. Some operators have found a gauze plug satisfactory for controling hemorrhage, and one observer uses his finger for a similar pur-

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pose with satisfactory results. The diastolic suture should have a small grasp and when placed in the interrupted fashion is the most acceptable.

At present he was inclined to believe that there is considerable advantage to be secured in making the Loison flap. The first incision starts in the 3d interspace at the sternum and runs to the left two inches beyond the cartilage; the second, in the 6th interspace, also extends two inches beyond the cartilage, these are all now united at the sternal end, the flap to be turned outward. The 4th and 6th ribs are cut and 5th broken in turning out the flap. The advantage is not so much immediate as remote—that is, it preserves the integrity of the blood supply.

For an extrapleural attack on the heart on the left side he suggested that a combination embodying some of the features of both the Nietert and Loison flaps would probably meet the indications better than any flap we now have.

He submitted the following advantages as being possible: First, an extrapleural ingress to the heart; second, by turning the flap outward (Loison) instead of inward (Nietert), preservation of the blood supply; third, by pushing outwardly the pleural attachments (the flap hinging externally) it would be possible to secure a larger extrapleural area for operative manipulations.

Dr. CARSON listened with a great deal of pleasure to Dr. Nietert's classical paper and the interesting discussion. Some years ago he saw three cases of wounds which were believed to involve the heart but as the patients recovered and as the prevailing opinion at that time was that a wound of the heart was always fatal, the injuries were supposed to have been limited to the pericardium. The first case he recalled was seen with Dr. Funkhouser. The patient was a young man with a stab wound in the chest which certainly went into the pericardium and, as they thought then, extended to the heart. They expected the patient to die, but much to their surprise he recovered and then they supposed the wound must have been limited to the pericardium. He remembered hearing the splash referred to by the essayist, though it seemed not so much a splash as a peculiar swishing sound as if the blood was thrown forcibly against a board. There was some dyspnea, though not distressing and the patient made a quick and complete recovery.

In the next case there seemed to have been a large quantity o

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blood in the pericardium; the wound was large and the patient suffered considerably from dyspnea but he ultimately recovered.

The third case was a small penetrating wound accompanied by some dyspnea, though not a great deal. This patient also recovered. He had seen other cases where he was convinced the heart had been wounded and which produced the symptoms described by Dr. Nietert.

The flap of Dr. Nietert is very ingenious, but the speaker thought there would be few occasions when it could be used, for the reason that most wounds of the heart penetrate the pleural cavity. He suggested that a gauze sling might be placed around the heart to hold it up and thus do away with the hand of an assistant and give more working room.

Dr. MEISENBACH was particularly gratified to know that an American surgeon has again stepped forward to destroy a certain illusion—namely, that heart wounds are necessarily fatal. Some years ago while in Europe he had seen the pericardium opened and tamponed, but stab wounds and gunshot wounds of the heart are seen comparatively rarely in the clinics of Europe.

The flaps as described by Dr. Sharpe were also very interesting and instructive. However, the surgeon would have to be guided by the case under observation at the time of operating. As most cases are probably infected, and the pleural cavity in the vast majority has been entered, the flap need not be limited to a prescribed area. A very simple method for bringing the heart forward in the wound he thought would would be to pass a suture through the apex; this would obviate the necessity of an assistant's hand, which necessarily obscures the field. Such a procedure is adopted in operations upon other organs. He thought, too, it would be advisable to do a pleurocotomy in cases where there was a possibility of infection of the pleural cavity.

Dr. REDER said the paper read by Dr. Nietert was a new chapter in surgery. In all his hospital practice he had never seen a case of wound of the heart. He mentioned, however, an injury to the heart in a case where aspiration of the pericardium had been done. The diagnosis was in error and, of course, only pure blood had been extracted. This patient suffered considerably with dyspnea for two hours after the operation, although the aspirating needle was very fine and no permanent harm was done.

In line with Dr. Carson's suggestion for bridling the heart he

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thought a piece of rubber bandage might be used for lifting the heart out and holding it in position.

Dr. BARKER asked what proportion of the cases operated upon were of African descent.

Dr. NIETERT said the only negro in the twenty-seven cases on record he thought was the last case he saw. These cases all represent cases where the wounds penetrated the cavity of the heart; no case was quoted where this was not definitely ascertained to be the fact. Wounds that enter the cavity of the heart almost always prove fatal, and wounds which are confined to the muscular tissue of the heart usually recover. Death from hemorrhage usually occurs from wounds penetrating the cavity of the heart.

Dr. Meisenbach's suggestion in regard to thoracotomy he thought a good one. The literature seemed to point to empyema following most of the cases of heart suturing.

THE BETHESDA PEDIATRIC SOCIETY.

Meeting of March 28, 1902; Dr. John Zahorsky, President, in the Chair.

Dr. W. L. JOHNSON read a paper (see page 343, this issue) on

Influenza.

DISCUSSION.

Dr. FISCH declared that he had been unable to discover any histologic differences between the so-called "grip" lung and other bronchopneumonias, as has been asserted by Dr. Glasgow and others. The foci, however, are usually smaller in influenzal infections, as compared with streptococcic or pneumococcic infestion. It is by no means certain that the influenza bacillus can primarily produce pneumonic symptoms; usually some other micro-organism is also present. Yet general infections producing septicemia, kidney lesions, and even meningitis, may be caused by this micro-organism.

There is a great tendency at present to diagnosticate all acute catarrhal inflammations of the upper air passages as grip; influenza is comparatively rare, except when a general epidemic is present. The

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origin of a pandemic is still somewhat obscure. Probably meteorological states have some influence. It is known that the influenza bacillus is always with us. Colonies of this micro-organism occur constantly in many phthisical cavities, as Brieger has shown. These became the foci of general dissemination; certain conditions must, of course, increase their virulence. There is one other fact that must be taken as evidence against primary pneumonic infection—this is the absence of a leucocytosis in all influenzal infections, while a leucocytosis is invariable in these "influenzal" pneumonias.

Dr. LEVY stated that he had observed Kolipinski's sign in several cases of grip; it is not invariably present and he has seen these white points on the palate when no other sign of grip could be discovered.

Dr. ZAHORSKY called attention to a peculiar asthma-like condition often seen in children and probably due to the influenza bacillus. He took the liberty to call these cases influenzal bronchiolitis. The disease begins with slight fever, sneezing, moderate cough, and general malaise; after a few hours or days respiratory difficulties arise and the dyspnea often becomes alarming. On examination of the chest sonorous, sibilant, and later, mucous râles are audible. Percussion gives a note of increased resonance. The temperature does not rise very high, but is almost always above normal. The clinical symptoms very much resemble asthma, but there is one difference which is striking, and that is the disease invariably lasts three to five days, in spite of treatment. It must, therefore, be considered an infection.

Dr. PHILIP NEWCOMB read a paper (see page 349, this issue) on

Erysipelas.

DISCUSSION.

Dr. LEVY suggested that the poor result may be particularly explained by the fact that the adults had other diseases (valvular disease, cancer, etc.) and the infants were very feeble.

Dr. FISCH remarked that the fact of the streptococcus reaching the skin from a gland and then spreading its effect in the skin is rather peculiar. But it must be remembered that many infections—such as tuberculosis, the exanthemata, etc., have a tendency to remain in the skin. He did not believe a very satifactory explanation has been given for this peculiarity.

Dr. ZAHORSKY recalled several cases in the last few years in which

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a violent acute adenitis was followed by an extension of the inflammation to the skin, and a rapid spread of the infection in the integument. It has been claimed that inflammations have a tendency to remain in the skin for the simple reason that the leucocytes have less freedom in the dense structures.

Dr. JOHNSON reported two severe cases of erysipelas in infants which he had recently in private practice. One case lasted more than six weeks and ended in severe suppurative cellulitis. In these cases in infants treatment seems to be entirely powerless. In the last case all known methods were tried to prevent the spread of the inflammatory process but without success. Even in breast-fed infants the disease is very fatal. It has a tendency to spread all over the body in babies; immunity is not so readily established.

The American Association of Urologists was organized on February 22, 1902, essentially for the purpose of further development of the study of the urinary organs and their diseases. Although most of the founders of the Association are specialists in genito-urinary diseases, membership is not limited to those engaged exclusively in this specialty. The Association consists of active, corresponding and honorary members, and is in a great measure modelled upon the plan of the Societé Francaise d'Urologie, modified to suit American circumstances and conditions. Whenever possible, the branch associations throughout the United States, British Possessions and Spanish America, will hold their meetings on the same evenings as does the parent association in New York (the first Wednesday in each month). The work of the Association is principally clinical, for the demonstration of new methods in the technique of examination and treatment. The annual meeting of the American Association of Urologists will be held on the last day and the day following the annual meeting of the American Medical Association.

The officers of the Association are: Ramón Guiteras, M.D., President; William K. Otis, M.D., Vice-President; John Van der Poel, M.D., Treasurer; Ferd. C. Valentine, M.D., Secretary; A. D. Mabie, M.D., Assistant Secretary.

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REPORTS ON PROGRESS.

MEDICINE.

In Charge of W. M. Hoge, M.D.

Apomorphin Hydrochlorate in Alcoholism.

Warren Coleman and J. M. Polk (*American Medicine*, March 8, 1902) draw the following conclusions from a study of 87 cases of various grades of alcoholic intoxication:

1. To obtain a hypnotic action from apomorphin it should be given hypodermatically.

2. The dose can not be fixed; it is best to begin with a small dose ($^1/_{30}$ gr. or less) and repeat this or give a slightly larger dose within a short time. Further doses should not be given after vomiting occurs, until several hours have passed.

3 Doses repeated in two or three hours have but little beneficial effect.

4. The administration of apomorphin should not be repeated in patients who are weak.

5. The duration of the hypnotic action is only a few hours, and when the patient awakes his condition is practically unchanged, except in ordinary "drunks."

6. The best results are obtained from apomorphin when it is followed in two or three hours by some recognized hypnotic—as bromide, chloral, etc.

6. Solutions of apomorphin are unstable, and should be freshly made.

8. Apomorphin may be employed as a hypnotic in selected cases of alcoholism, we obtain the best results in ordinary "drunks," and in cases verging on delirium tremens; but in some of these cases the drug has no effect whatever.

9. The administration of apomorphin to patients in delirium tremens is, in our experience, without beneficial result, and may even be attended with danger, from its depressing action.

Dengue Fever.

Harris Graham, of Byrouth, Syria, (*Medical Record*, February 8, 1902) has discovered in the blood of patients affected with this disease

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a parasite which invades the blood-corpuscles and which he considers the probable cause of the affection. It appears to be transmitted through the agency of mosquitoes, in the same manner as the parasite of malaria.

SURGERY.

In Charge of

A. V. L. BROKAW, M.D., and E. C. GRIM, M.D.

Suture of the Abdominal Wall.

Charles Davison (*Annals of Surgery*, March, 1902) gives his routine method of closing abdominal wounds. He considers no suture material ideal, since the absorbable suture can not be sterilized by prolonged boiling. and buried sutures act as foreign bodies after their function has ceased.

Davison considers the layer method of suturing preferable, and to obviate the objections above mentioned, concerning material, he uses a continuous suture of silkworm gut that can be withdrawn. His method of insertion into and removal from the fascial layer will illustrate. A small reverse bow-knot is tied four or five inches from the end of the strand; the edges of the fascia are caught by forceps and held by an assistant; the suture is introduced into a firm place in the fascia back from the end of the wound and drawn tightly up to the knot, and the wound is closed by the continuous herring bone suture. At the last stitch the suture is shirred up tightly, grasped by a smooth-pointed dissecting forceps at its exit from the fascia, and another reverse bow-knot tied below the point of the forceps; the ends are allowed to hang out at the angles of the wounds. This suture is removed in two or more weeks. Simultaneous traction on the two ends unties the knots, then the suture is clipped close to the skin at one end and withdrawn by an artery forceps. The skin is closed by the Halstead subcuticular stitch of silkworm gut.

In general, the advantages of this method are:

1. Certainty that all suture or ligature material placed in the wound has been made sterile by boiling in water.
2. Accurate layer approximation of tissue.
3. Removal of the buried sutures when healing is complete.
4. Capillary drainage from each layer.

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5. Safety of intestines from injury during application of the sutures.

6. Rigidity of application.

7. Minimum line of irritation on the peritoneal surface and consequent adhesions to the viscera.

8. Slight scar in the skin, there being no perforation of the skin by sutures.

9. All of the advantages of a permanent buried suture without the danger of future irritation and extrusion of the knot.

10. The advantages of an absorbable suture without the danger of sepsis from the suture, and without producing a nidus for septic germs from the blood current during absorption.

OPHTHALMOLOGY.

In Charge of W. A. SHOEMAKER, M.D.

Albuminuric Retinitis and Uremic Amaurosis.

Edmund D. Clap (*Boston Medical and Surgical Journal*) finds these troubles rare in pregnancy, but very important when they do occur. The prognosis of albuminuric retinitis, as to sight, is favorable for the first attack if it occurs after the sixth month, but less and less so for each succeeding attack. Prognosis for sight is bad if it occurs before the sixth month. When it occurs early in the pregnancy, abortion should be considered if the retinitis is at all severe, especially if hemorrhagic, or if a slight retinitis is progressive in spite of treatment. When retinitis develops after the sixth month it is best to wait, especially in first attack, and not induce labor unless some other symptom demands it.

Tuberculosis of the Conjunctiva.

Howard F. Hansell (*Annals of Ophthalmology*) reports a case and reviews the literature of the subject. The causes are self-infection, metastasis and traumatism. The palpebral conjunctiva is most frequently affected. The tubercles appear in the form of miliary ulcers, subconjunctival nodules resembling the granules of acute trachoma, hypertrophied papillæ and pedunculated tumors. Satler mentions lupus as one of the forms. For diagnosis, tuberculosis of other organs and microscopic examination must be largely depended

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on, as tubercle bacilli are rarely found. Many cases are masked by trachoma, and others diagnosed as trachoma are tuberculous. The methods of treatment most strongly endorsed are excision and the galvano-cautery. When an operation is advisable the inflamed section and the healthy zone around it should be excised. Also the preauricular and other glands when they are involved. When an operation is not advisable the galvano cautery should be used.

Embolism of the Central Artery of the Retina.

C. Schweigger (*Archives of Ophthalmology*) questions the frequency of embolism of the central artery, doubt of which was expressed by him more than thirty years ago; only in recent years has the anatomic basis been given for these cases of sudden blindness, by the demonstration of endoarteritis with narrowing of the lumen, which accompanies various forms of retinal disease. The view that sudden blindness with cloudiness of the disc and retina depends upon embolism arose only because the appearance that was previously termed infiltration was later termed embolism. Graefe's case teaches that embolism is not immediately followed by cloudiness. On the contrary, the narrowing of the retinal arteries from endarteritis must cause slowing of the blood current, which may produce infiltration.

Improved Lantern for Detecting Color-Blindness.

William Thompson and Archibald G. Thompson (*Philadelphia Medical Journal*) describe an improved form of lantern which they recommend for use as a supplement to the usual test with Holmgren's wools, the deficiencies of which it supplies. With the new lantern any attempt to dishonestly pass the color test is absolutely impossible.

Amblyopia Due to Excessive Tea-Drinking.

E. W. Henry (*Ophthalmic Review*) reports the case of a man, aged 57 years, who used no tobacco, drank very little, but indulged freely in excessively strong tea. He complained of dazzling and mistiness, and his vision was reduced nearly one-third. Under treatment, and discontinuing the tea, his symptoms disappeared and vision in three months became normal.

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BOOK REVIEWS.

The International Medical Annual, 1902.—E. B. Treat & Co., New York and Chicago. Price, $3.00.

This is the twentieth year of this "Year-book of Treatment and Practitioners' Index," and is a very valuable reference work. Even if the practitioner reads his current journals there is much that will escape him, and a book of this kind will convince one of this truth. For the practitioner who has not time to keep abreast with the literature as it appears, a work like this is imperative.

This volume gives all that is late and reviews much that has attracted considerable attention; for instance, "Arsenical Poisoning," revived by the epidemic during the latter part of 1900, is gone into with marked spirit and thoroughness; some valuable colored plates and other illustrations adding interest to the discussion.

The antitoxin treatment of diphtheria is emphatically demonstrated *the* treatment of diphtheria, and the dosage considered. Why intubation should be resorted to only in hospitals we can not understand, nor can we subscribe to such conclusions. [Leave the thread on if necessary]. Enucleation (Bayeux) is described—the removal of the tube without any instrument whatever.

We regret that the chapter on the blood is not more complete. A subject so vital and recent, so far as certain deductions are concerned, should have more space. The references, that is, bibliography, are, however, quite full.

Yohimbin as a remedy for impotence is revived, but except for the wealthy, we are informed, is not to be used, on account of the prohibitive price.

Toxins and antitoxins are dealt with by Wm. Murrell, of London, and Joseph McFarland, of Philadelphia.

X-Rays by John McIntyre, Sanitary Science by Joseph Priestly, both Englishmen.

The work throughout is an instructive review of the best in recent literature and we have no hesitancy in pronouncing it more than valuable—say necessary, to the progressive physician.

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NOTES AND ITEMS.

Surgical Treatment of Mitral Stenosis.—And now comes Lauder Brunton and with his characteristic imaginative qualities offers to the surgical world a startling procedure; namely, the passing of a bistoury throught the heart muscle and cutting the narrowed ring of the orifice in mitral stenosis. Even this must not be pronounced impossible; no doubt, some bold surgeon will act upon this suggestion.

The "Pink-Eye."—It has been demonstrated that the so-called "pink-eye" is an infection of the conjunctiva by the influenza bacillus. The Koch-Weeks bacillus has all the cultural peculiarities of Pfeiffer's bacillus. It follows that the "pink-eye" may be the source of a house epidemic. Its occurrence should be watched and the individual affected be kept apart from infants and children.

St. Louis Not Responsible.—Judge Fisher decided that the city of St. Louis could not be held responsible for damages on account of the deaths of the children who recently died from tetanus which was caused by the administration of the antitoxin furnished by the Health Department. A suit has been brought against the members of the Board of Health.

Obituary.—Dr. W. W. Johnson, professor of the theory and practice of medicine in the Columbian University, died suddenly, on March 21, 1902, at Atlantic City. He was called in consultation in the case of President McKinley, and was the attending physician to the late J. G. Blaine.

A New Local Anesthetic.—The *London Lancet* contains reference to a new local anesthetic, obtained from gasu basu, a plant grown in India. An alkaloid has been extracted, the hydrochlorid of which is called nervocidine. A one-half per cent solution applied to a mucous membrane produces irritation and often symptoms of general poisoning—such as vomiting and salivation; but the anesthesia which develops very slowly, is very marked and lasts for several hours or even days.

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Nathan Lewis Hatfield Prize.—The College of Physicians of Philadelphia announces through its Committee that the sum of $500 will be awarded to the author of the best essay in competition for the "Nathan Lewis Hatfield Prize for Original Research in Medicine."

Subject.—The Relation Between Chronic Suppurative Processes and Forms of Anemia.

Essays must be submitted on or before March 1, 1903. Each essay must be typewritten, designated by a motto or device, and accompanied by a sealed envelope bearing the same motto or device and containing the name and address of the author. No envelope will be opened except that which accompanies the successful essay. The Committee will return the unsuccessful essays if reclaimed by their respective writers or their agents within one year. The Committee reserve the right not to make an award if no essay submitted is considered worthy of the prize. The treatment of the subject must, in accordance with the conditions of the Trust, embody original observations or researches, or original deductions. The competition shall be opened to members of the medical profession and men of science in the United States. The original of the successful essay shall become the property of the College of Physicians. The Trustees shall have full control of the publication of the memorial essay. It shall be published in the "Transactions of the College," and also when expedient as a separate issue.

Address J. C. Wilson, M D, Chairman, College of Physicians, 219 S. 13th street, Philadelphia, Pa.

Maltine Company Prize Contest.—Believing that a proper exercise of preventive medicine is of incalculable importance to the human race and desiring to stimulate further research in this line, or at least to disseminate some of the newer ideas so prominently discussed by the medical profession of recent years, we offer two prizes. A first prize of $1,000 and a second prize of $500, in cash, for the best essays on that subject.

Conditions of the competition:

1. Essays offered in competition must treat the subject of preventive medicine in its various relations to the welfare of the human race, either treating the topic in its broadest scope as affected by disease, custom, environment, heredity, etc., or from the view-point of the specialist who contends that the most potent factors inimical to

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mankind result from special conditions which he is enlisted to combat.

2. In order that there may be no violation of medical ethics and no suspicion of mere commercialism on our part, Maltine or any of its combinations must not be mentioned or even indirectly alluded to in the essays.

3. Competition is open to graduates of all recognized medical colleges.

4. The essays will be judged by the following gentlemen: Daniel Lewis, A.M., M.D., New York, President New York State Board of Health; Professor of special surgery (cancerous diseases), Post graduate Medical School; Surgeon to the Skin and Cancer Hospital; Editor "Medical Review of Reviews." Charles A. L. Reed, A.M., M.D., Cincinnati, Ex-President American Medical Association; Ex-President American Association of Obstetricians and Gynecologists; Fellow British Gynecological Society. John Edwin Rhodes, A.M., M.D., Chicago, Associate Professor diseases of chest, throat and nose, Rush Medical College; Former Professor of physical diagnosis and clinical medicine, Northwestern Univerity Woman's Medical College. The prizes will be awarded in accordance with their decision.

5. The essays are to consist of at least 10,000 words.

6. Each competitor is to send us three typewritten copies of his essay by mail in a sealed envelope; these copies are not to be signed by the author, or to contain anything which might point to his identity, but are to be signed with a nom-de-plume.

7. Another sealed envelope shall be sent to us containing this nom-de plume together with the author's name and address; this envelope must be indorsed "For Identification," and will remain sealed until the judges have decided upon the two prize-winning essays, and will then be opened in order that the names of the successful competitors may be ascertained.

8. The prize essays and any others which are deemed suitable will be published in a medical journal or journals subject to the approval of the authors.

9. We reserve the right to republish any of these essays in pamphlet form, restricting the circulation to the medical profession.

10. Essays entered in competition must be in our hands by September 1, 1902.

The Maltine Co., 8th av. and 18th st., Brooklyn, New York.

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Fig. 1. Bronze from Herculaneum, showing straight or active position of feet; also adduction of great toe.

Fig. 2. Child's foot-prints, illustrating straight or forward gait.

Fig. 3. Adult's foot-prints, illustrating everted gait.

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ST. LOUIS

COURIER OF MEDICINE.

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ORIGINAL CONTRIBUTIONS.

The Effect of Foot-Wear Upon the Form and Usefulness of the Foot.

BY PHIL HOFFMAN, M.D.,

ST. LOUIS, MO.,

CLINICAL LECTURER ON ORTHOPEDIC SURGERY, MEDICAL DEPARTMENT WASHINGTON UNIVERSITY; MEMBER OF THE AMERICAN ORTHOPEDIC ASSOCIATION.

AN absurd and lamentable custom of civilization and one that has been in existence for centuries, is that of moulding the foot into some false and pernicious shape by such covering as society or the shoemaker proclaims for the moment to be the correct fashion. The shape of the shoe differs in various countries and is changed from year to year, while the contour of the *normal* foot always remains the same. If we examine undistorted feet, specimens of which, in shoe-wearing communities, are rare except in young children, we find that there is no difference between those of the male and female, yet the style of foot-wear is radically different for each.

Modern society regards the small, and especially the narrow foot, as the beautiful one, and the dictum of fashion has greater influence than reason. Perhaps, the statement that society admires the small foot is not exactly true; for society,

Read before the Medical Society of City Hospital Alumni, March 6, 1902.

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as such, never sees the naked foot, but what it so commonly does admire is the dainty little shoe that hides its own handiwork—the distorted, cramped, calloused and repulsive foot. Here beauty is less than skin-deep, or at most, lies no deeper than the calfskin product of the cobbler's art.

Little harm would come from wearing improper shoes if Nature had given the foot no other function than that of a convenient pedestal to passively bear the body weight. In the construction of modern foot-wear a very important function of the foot is, as a rule, entirely disregarded. The normal foot serves not merely as a base of support, but also as a well-arranged machine which raises the body and aids in its propulsion. In other words, it has the important function of leverage. This mechanism is subject to the same physical laws that govern all machines and will suffer injury if the normal relationship of its structures is disturbed, if their movement upon one another is interfered with or if forced to assume an attitude that is disadvantageous to the functioning of its muscles.

The foot, to serve as a lever and be of much aid in the propulsion of the body must, in walking, be advanced directly in the line of the body with the toes pointing forward. This is the walk and attitude of muscular activity and strength in which the great toe points forward or slightly inward; in which the arches of the feet are raised and their inner margins form together an angle opening backward. In this position only can the muscles of the foot act to complete advantage. The body weight is not passively borne but is actively raised and balanced upon the front of the foot; the toes are spread and firmly pressed against the ground, little strain falls upon the ligaments and the gait is marked by vigor, spring and grace. This method of progression is adopted by the trained runners and by the sandal- and moccasin-wearing and bare-footed peoples; it is, in fact, the normal gait of all individuals in whom the activity and development of the muscles that control the foot have not been impaired. An excellent illustration of it is shown in Fig. 1, a photograph of the famous classic bronze found at Herculaneum. It is the natural walk of young children, often to the alarm of parents and even physicians, who through generations of false teaching have been led to believe that eversion of the foot is correct in walking. Commonly children are urged to turn their toes outward in walking, and

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Figs. 4–5. Instantaneous photographs of model walking with feet pointing forward and with feet everted. Posed after drawings by Whitman.

Fig. 6. Discobolus of Myron, showing strong toe action.

Fig. 7. Voluntary spreading of toes in infant's foot.

Fig. 8. Great range of voluntary spreading of toes in child whose deformity permitted use of front of foot only in walking.

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most gymnastic and dancing masters train their pupils to assume this attitude under the mistaken idea that it is the correct one. It is, on the contrary, the attitude of weakness, and the one that imposes the greatest strain upon the foot. The plea that it is graceful deserves little consideration, as this is but a matter of education and individual taste.

In the face of this popular belief it can not be too strongly emphasized that the straight position of the foot is the proper one. That it is the habitual one in every child with normal muscular development can easily be verified by observation on young barefooted children. To illustrate this walk the writer smoked a number of strips of cardboard with burning camphor and had children between the ages of 2 and 4 years, whose feet showed no distortion from shoe-wearing, walk over the blackened surface. This left impressions of the soles of the feet as they were alternately placed upon the paper. Fig. 2, a photograph of one of these strips, illustrates the straight or forward gait.

In shoe-wearing communities this strong and active gait is rarely seen after childhood. The walk of the average civilized man and woman is a walk of weakness, in which the feet are everted, the toes diverge from the central line of the body, the heels point toward it, and the inner margins of the two feet form an angle opening forward. This walk is illustrated by Fig. 3, a photograph of the sole impressions on smoked cardboard of an adult in the act of walking.

The difference between the walk of small children and that of adults will readily become apparent by the examination of shoe-prints on a snow-covered sidewalk. It will be observed that the right and left shoe-prints of the former are, as a rule, parallel, while those of the latter usually diverge from heel to toe.

The position of eversion is that of passivity or rest. In this position the body weight and strain are transferred to the inner and weaker side of the foot, the long arch of which is depressed and the inner margin rendered convex. Little muscular activity is made use of and the foot depends almost entirely upon the form of the bones and the strength of its ligaments for support. The more the toes diverge from the central line of the body in the act of walking, the less is the leverage function of the foot used; and the less this function is used the more tiring and less elastic the gait becomes and the

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more will progression be accomplished by stepping from heel to heel instead of by a regular heel and toe gait. The everted gait is, to a remarkable extent, the one used by the average shoe-wearing adults.

The difference in mechanical advantage between the straight and everted walks is shown in Figs. 4 and 5, which are instantaneous photographs of the same model, a fairly well-developed individual, in the act of walking. The model was posed after the original drawings of Whitman. The first shows strength, grace and elasticity; separation of the toes, especially the great from the second toe; and broadening of the front of the foot. The other shows a lowered arch and a heavy, inelastic gait, in which leverage is replaced by a push with the inner border of the foot, which border is rendered convex and compelled to bear most of the body weight.

When we consider the mechanical disadvantages to which the foot is subjected by the conventional modern shoe, it becomes evident that this cause alone could be largely responsible for the weakened and often painful condition of the foot and lead to the lack of strength and imperfection in gait so prevalent in our cities.

The range of motion in the tarsal and phalangeal joints of the normal foot is considerable, and can, by training, be developed to a remarkable degree. With some savage tribes the toes, especially the greater ones, are used to advantage in climbing. Many natives of the Philippines will, while walking, use their toes with almost the same facility as their fingers in picking up objects from the ground. The writer remembers seeing a young man, who, born without hands, had so thoroughly trained his toes to perform many of those functions for which the hands are ordinarily considered indispensible, that he could use knife and fork, comb and brush, and pen and ink; could wash and dress himself, perform on the piano and do many other things with considerable ease. This was very unusual, but it well-illustrates to what extensive intricate uses the muscles of the commonly cramped and abused foot may be put. The Greek sculptors represented strong toe-action in many of their athletic figures. An especially good example is the foot of the famous Discus Thrower, attributed to Myron, Fig. 6, where the toes fairly grasp the ground to aid in steadying the athlete at the moment of supreme effort when he is

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Figs. 9–10. A mild and an advanced case of flat- or pronated foot. Observe similarity of appearance between these and Fig. 5.

Fig. 11. Photograph of a Negroto, illustrating toe development in bare-footed races.

Fig. 12. Boy's feet showing no shoe deformity. *Fig. 16.* Plantar surface of foot of Philippino. *Fig. 18.* Foot of Mercury of Praxitiles.

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straining every muscle to begin the forward motion of the arm.

Normally, the toes can be hyperextended to nearly a right angle and flexed well beyond one. The range of adduction at the medio-tarsal articulation should be between 30 and 40 degrees. In watching the naked foot of an infant, it will be seen that there is a considerable range of lateral motion of the toes which permit their voluntary separation, Fig. 7. This persists in older children whose feet have not been injuriously compressed by shoes. One 6-year old, with hip disease, who had been lying upon a recumbency brace for many months, had, by practice, greatly developed it, and was accustomed to amuse herself by making, as she called it, "faces with her toes." The most extreme example of development of this motion, the writer has ever seen, was in a boy of 9 years, with congenital talipes equinus, who used only the front of his foot in walking and who could spread his toes to the extent shown in Fig. 8. None of these movements are ever so free in shoe-wearing adults, and their range largely depends upon the type of shoe that has been worn, especially during childhood. It is exceedingly rare to find an adult in a shoe-wearing community who retains even slight power of laterally separating the toes. Shoes, as they are usually worn, do not permit free and unrestricted movement of the many small joints of the foot. Their action, to a greater or less extent, is that of a splint. Interference with joint movements necessarily, through disuse, leads to weakness and atrophy of the muscles that control the joints. Weakness of the muscles leads to the everted gait through the lessened ability of these muscles to adduct the foot and perform the work of leverage necessary to progression with the foot in the adducted position. It takes but a few years of foot splinting to so weaken the muscles as to render them inconvenient for constant use, and usually, by the time a child is 10 years of age the strong and straight walk has already begun to give way to the everted one. When the everted gait becomes habitual, it, in turn, leads to farther weakness of the muscles; for with the foot in this position it can act only as a support and not as a lever, and the muscles are forced into disuse.

The everted position, in which the strain falls upon the ligaments, the arch is lowered, the foot rolls out and its inner margin is rendered convex, is one that simulates pronated or

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flat-foot. Whenever this condition becomes exaggerated and fixed, then flat or pronated foot, with its train of distressing and disabling symptoms actually exists. In these cases the constant stretching of the soft parts and grinding of the tarsal bones, in their forced position, against each other may lead to inflammation of these structures and result in the tender, rigid form of flat-foot, often diagnosed as rheumatism, which, but too common, results in much suffering, and incapacitates many from work. Figs. 9 and 10, the first a mild and the second a well-advanced case of flat-foot, when compared with Fig. 5, illustrate the significant similarity in appearance of the feet in this affection and in the weak or everted walk.

As flat-foot is but the fixation and later the exaggeration of the position of weakness or rest, it is quite evident that the habitual assumption of such position may, and often does, eventually lead to this deformity. The everted or resting position may be the normal one in standing, but never the correct one for walking. Prolonged standing is frequently the cause of flat-foot while *correct* walking is never.

The ill-fitting shoe results in muscle weakness; muscle weakness leads to everted gait; this, in turn, by forced disuse of muscle function leads to greater weakness, and the consummation is a weak, distorted, flattened and, later, a rigid, tender and painful foot.

The lasts over which the foot-wear of civilization is shaped are rarely modeled in that spirit of truth which would make them conform to the contour of a normal foot. The whim of society and the manufacturers' enterprise alone regulate their shape. Society, apparently, is agreed that the human foot as formed by Nature is coarse, vulgar and unsightly, and that its width, especially at the toes, is entirely too great. The manufacturer finding it more to his financial interest to fit the desires of his patrons rather than their feet, places upon the market foot-wear that more or less crowds the front of the foot.

The widest part of an undistorted foot corresponds to a line drawn from the end of the little toe to the base of the great one (See Figs. 12, 15, 16, 17, 18, etc.) It is just at this point that the conventional shoe is made narrowest. Crowding of the toes which, as already described, leads to weakness of the muscles from disuse, also results in more direct injury. In the normal foot the phalanges are in line

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Figs. 13–14. A predominant type of foot-wear and its inevitable effect.
Fig. 15. Undistorted child's feet showing straightness and separateness of toes. The long axis of the great toe prolonged backward strikes center of heel.
Fig. 21. Impression of weight-bearing surfaces of undistorted child's feet. Contrast with Fig. 22. *Fig. 24.* Classic sandal, statue of Jason.

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with the metatarsals, and when bearing the body weight the toes separate and widen the base of support. This is especially true of the great toe which is separated from its neighbor by a considerable interval, and in this position acts as a powerful brace to the long arch, assists in keeping the foot adducted and is a considerable factor in the work of leverage. In barefooted, and sandal- and moccasin-wearing races as well as in very young children, this adduction of the great toe during weight bearing is universal. It can be seen in Fig. 1, and is characteristic of classic sculpture. Fig. 11, a photograph of a negroto (kindly furnished by Dr. Rumbold) and Fig. 12, a photograph of the well-preserved feet of a 6-year old boy who had lived in the South and gone barefooted most of his life, are illustrations of it in undistorted modern feet.

A condition that may be considered almost universal among shoe-wearing adults, is one of more or less crowding of the toes, especially of the great toe, which either underlies or overlaps its neighbor. This condition is known by the name of hallux valgus. Fig. 13 shows a pair of feet afflicted with this deformity, and Fig. 14 represents the shoes worn upon these feet. The relative size of the two photographs corresponds to the originals. It will be seen that the shoes are not only of an improper shape but that they are entirely too small, even for a foot already so much distorted, and one can readily imagine the crowding necessary to adjust the foot to the shoe. This condition is, unfortunately, but too common, especially among women. The writer is not of the opinion that a single pair of shoes was the sole cause of the distortion, but believes that the condition could have been brought about only by years of such abuse. The illustrations are of interest as showing a predominant type of foot-wear and its inevitable effect.

The lateral displacement of the great toe causes an undue prominence of its metatarso-phalangeal joint. The friction of the tight shoe upon the prominent metatarsal head leads to its inflammation and hypertrophy. In time a bursa forms over it. This at first acts as a protection, but being exposed to constant grinding between the shoe-leather and the enlarged head of the metatarsal it becomes inflamed and overdistended with fluid and gives rise to the condition generally known as bunion. Occasionally such a structure suppurates and then becomes a source of danger as well as of pain.

Examine the feet of young children before they have

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been crippled by shoes. Observe how distinct and separate each toe is; no one crowding its neighbor, the great and lesser toes on a line with their metatarsals, and the inner border of the foot a straight line. The axis of the great toe prolonged backward will, in the normal foot, strike about the center of the heel. Fig. 15, is a photograph of a pair of such feet. That this condition would continue throughout life in an unhampered foot is proven by the shape of adult feet among barefooted races. Fig. 16, the naked foot of a Philippino soldier (also furnished by Dr. Rumbold), will compare favorably in form with that of a child. The sandal-wearing ancients retained the straightness and separateness of the toes; this is to be seen in classic sculpture, of which the right foot, in Fig. 17, a photograph of the famous statue—Mercury in Repose, which is, probably, the finest bronze of antiquity, and Fig. 18, the foot of the Mercury of Praxitiles, are fine examples. The same holds true for modern sandal-wearers, as, for instance, the Japanese and Somali. Contrast with these last illustrations Fig. 19, a photograph of a pair of average feet, whose owner did not consider them pathologic, and Fig. 20, a case of well-marked and painful hallux valgus, which required operation for its relief. Observe the general crowding of the toes and that the line prolonging the axis of the great toe backward, falls well to the inner side of the heel.

Fig. 21, impressions of the weight bearing parts of the foot-soles of a child, and Fig. 22, impressions of the soles of a pair of average adult feet, again illustrate the difference between the spacing and direction of normal toes and those that have been crowded by modern foot-wear. In this connection the well-worn Indian moccasins pictured in Fig. 23, are of interest. A and C show the soles of two, worn by different Sioux. Observe how they are made with an inner border allowing sufficient room for the great toe, and with an outer border following the line of the lesser toes. See the impressions the wearers' feet have made. The end of each toe shows distinctly and is separated by a proper interval from its neighbor. The line of the great toe is as straight as in the infant's foot. The arch is well formed and the imprints altogether resemble the impressions of undistorted feet shown in Fig. 21. This same type of imprint is seen in the rougher southern Apache moccasin shown in B. The outlines which were faint in the photograph have been accentuated by tracing with ink.

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Fig. 17. "Mercury in Repose." Foot shows straightness and separateness of toes characteristic of classic sculpture.
Fig. 22. Impressions of weight-bearing surfaces of average adult feet. Contrast with Fig. 21.

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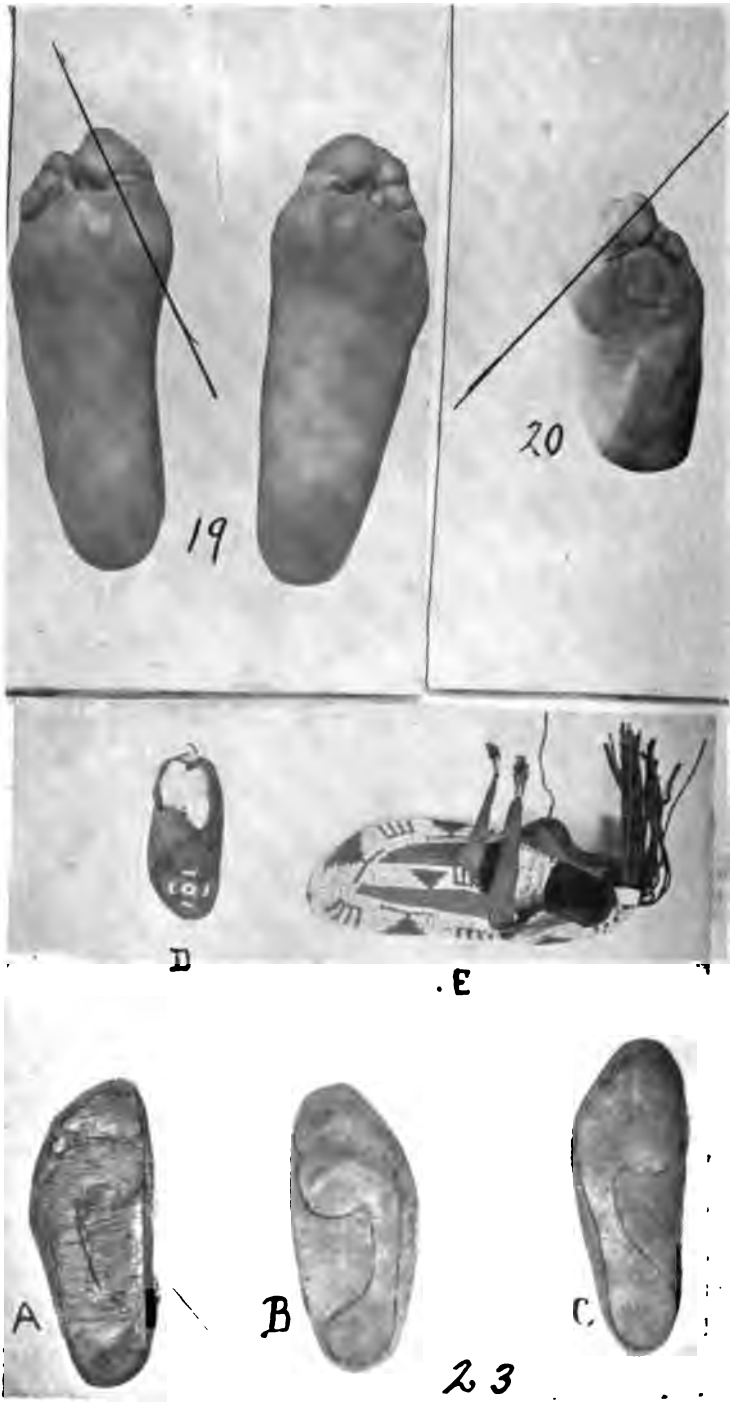

Fig. 19. Average adult feet showing crowding of toes from shoe wearing. Line of great toe prolonged backward falls to inner side of heel. *Fig. 20.* Well-marked painful hallux valgus. *Fig. 23.* Indian moccasins. A and C (Sioux) and B (Apache) show impressions of wearers' feet resembling impressions shown in Fig. 21. D, child's moccasin. E, upper surface of Cheyenne moccasin; all have a straight inner border and an outer border following line of lesser toes.

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The small moccasin, D, gives evidence that from early childhood the Indian's foot is well shod. E shows the upper surface of a Cheyenne moccasin which, too, is shaped to conform to the contour of a normal foot. These moccasins were kindly loaned by Drs. Steele and James.

How the classic sandal conformed to and preserved the shape of the front of the foot is illustrated by Fig. 24. The thong between the great and second toes probably acted as an aid in adducting the former.

A foot showing no compression of the toes is very rare among civilized shoe-wearing adults. The writer has never seen it except in instances where it had been impossible to wear an ordinary shoe, as in certain congenital club-feet, which had worn coverings that did not compress the toes. Fig. 25 is an illustration of how accustomed civilization has become to certain foot deformities, and how unaware the average individual is of unsightliness present in his own foot. The complete picture represents a photograph of the naked body of an instructor of physical culture which was displayed in down-town show windows as an advertisement. In one corner of the card is printed: "*One of the finest-formed athletes in the world*," yet, absolutely no attempt is made to hide the right foot, the great toe of which presents a well-developed case of hallux valgus.

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(*To be Concluded Next Month.*)

The International Association of Railway Surgeons.—This Association met in St. Louis, April 30, May 1 and 2, 1902. Dr. F. J. Lutz delivered the address of welcome to the two hundred and fifty members present. While the papers read and discussed were important, the greatest interest was taken in the address of the President, Dr. Rhett Good, of Mobile, Ala. He believed that the true relationship of the surgeon to the railway company is too often misunderstood. Unfortunately, the surgeon's services do not at once show positive results in the book accounts.

He suggested that a list should be made of railway surgeons who might be eligible to become army surgeons should an emergency arise.

Stress was laid on the importance of teaching railway employes how to give first aid to the injured.

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The Oviducal Segment of the Utero-Ovarian Artery.

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GENERAL REMARKS.

ACCORDING to my injected, dried and x-rayed specimens the oviducal segment of the utero-ovarian artery is divided into three branches, viz.: (*a*) Ramus oviductus, which courses between the blades of the mesosalpinx to supply the oviduct with rami laterales and anastomoses with the ovarian segment at the oviducal pole of the ovary. (*b*) Ramus ovarii, which courses along the distal border of the ligamentum proprium ovarii between the blades of the ligamentum latum to supply the ovary with rami laterales whence it anastomoses with the ovarian segment. (*c*) Ramus ligamenti teretis, which arises, in general, from the ramus oviductus and traverses the middle of the round ligament to its origin from the deep epigastric (external iliac).

The oviducal segment extends from the utero-oviducal angle to the external pole of the ovary. This segment begins at the bifurcatio arteria uterina medial and ends at the bifurcatio arteria uterina proximal. The oviducal segment presents, what I shall term, the ovarian vascular circle, which is composed of the ramus ovarii and ramus oviductus. The three branches of the oviducal segment emit rami laterales to the oviduct, ovary mesosalpinx, mesometrium and mesonephros, and all are solidly and compactly anastomosed. The oviducal segment offers, perhaps, the widest variation of any of the five segments of the utero-ovarian artery. I dissected and x-rayed no subject which did not possess the ovarian vascular circle. However, the classic Hyrtl reported subjects which showed only one main artery in the oviducal segment and, of course, that would be the ramus ovarii.

Dissections and the x-ray demonstrates that the oviducal segment shows considerable variation in its anastomotic outlines.

1. The general form of the oviducal segment which I have adopted, consists of a distinct ramus ovarii and a distinct ra-

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mus oviductus. This form makes a distinct macroscopic ovarian vascular circle.

2. A secondary form of the oviducal segment is where the ramus ovarii is distinct and large, but the ramus oviductus is indistinct, its anastomotic network is represented by an indefinite anastomosis. The ovarian vascular circle is not macroscopically distinct by the ramus oviductus being a single line.

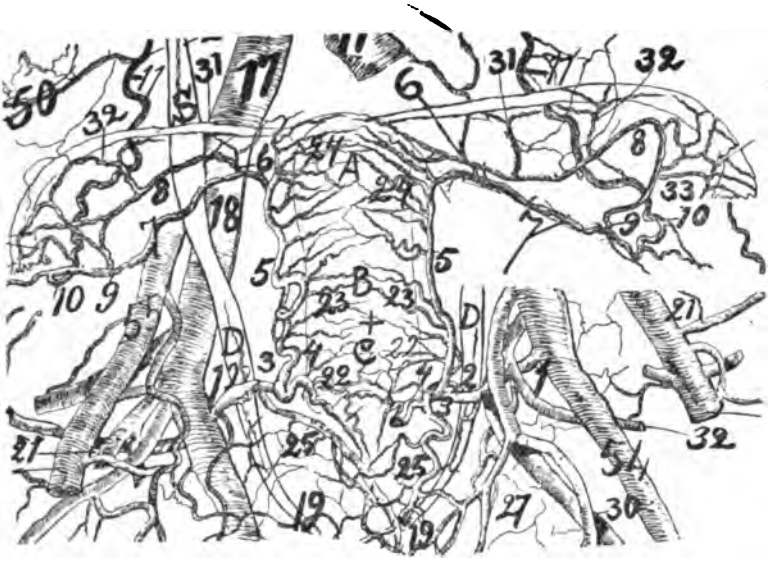

FIG. 1.—Oviducal Segment of an Infant, drawn from an x-ray of the the ovarian vascular circle of an infant one day old. The subject was injected with starch and red lead and an x-ray taken in Dr. Pratt's X-Ray Laboratory. The bilateral ovarian vascular circle —6, 8, 9; 6, 7, 9. 9, 10, 11 the ovarian segment of the utero-ovarian artery; 1, 2, 3, 4 pelvic floor segment; 4, 5, 6 uterine segment; 6, 8, 9 the oviducal segment which is the ovarian vascular circle; 50 anastomosis between the utero-ovarian and renal artery. (Author).

In both forms the oviducal ampulla and pavilion receive each a macroscopic ramus, but the isthmus in the secondary form may be supplied by a branch from the ramus recurrens fundi. In the first form of anastomosis in the oviducal segment, *i.e.*, with a distinct macroscopic ovarian vascular circle, the ramus oviductus and the ramus ovarii are of almost uniform caliber, but the ramus ovarii is always the larger in cali-

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ber and the most spiral in outline, and is, undoubtedly, a segment of the original utero-ovarian vascular circle of the Wolffian body. In some cases the ramus oviductus is extremely short but the rami laterales oviductus are practically long and large. In such cases the ovarian vascular circle is disproportionately small in diameter. Also the ramus oviductus may pass distal or proximal to the ramus ovarii. (See Figs.)

In the second form the ramus ovarii is of equal caliber with the adjacent parts of the utero-ovarian artery, *i.e.*, it is a segment of the great genital arcade and gradually glides proximally into the ovarian segment and distally into the uterine segment. In this form the ramus oviductus is a secondary branch in size and spirality and is not sufficiently prominent in caliber to demonstrate by gross dissections a distinct macroscopic ovarian vascular circle. Of course, the rami laterales oviductus solidly anastomose and produce always a continuous microscopic anastomatic ramus oviductus and thus completing the ovarian vascular circle. In some of such cases the anastomosis is very irregular and requires thorough injections and excellent light to trace the lines of anastomosis in the mesosalpinx.

Perhaps, in the vast majority of subjects the oviducal segment consists of a ramus ovarii and a ramus oviductus forming an ovarian vascular circle which emits rami laterales ovarii from its periphery, the ramus oviductus (long helicine) and ramus ovarii (short helicine).

The main lateral branch of the oviductal segment is directed to important and complicated functionating organs, viz.: (*a*) The ovary, the central sexual organ of woman; (*b*) the oviduct (a sphincter), the important reproductive ova transporter and only macroscopic intraperitoneal organ; (*c*) the oviducal ampulla, the receptaculum seminis, or depot of conception, and (*d*) the oviducal isthmus (a sphincter).

The ramus ovarii and the ramus oviductus may be anastomosed by brances of considerable size passing from one to the other.

Also the round ligament segment may be anastomosed by macroscopic branches with the ramus oviductus or ramus ovarii or with both. The oviducal segment passes lateralward from the uterine border distal to the ligamentum ovarii proprium in the mesometrium and mesosalpinx. At the distal end of the oviducal segment the utero-ovarian artery is remarkable for its

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strongly looped condition. The general rule is that at the point where the utero-ovarian artery leaves the lateral border of the uterus it emits one or more rami fundi; one branch of which passes along the distal oviducal border, the ramus oviductus, and one branch along the distal border af the ligamentum ovarii proprium. The oviducal branches coalesce at the oviducal pavilion, *i.e.*, in the ligamentum suspensorium ovarii to form the ovarian segment. Frequently, extravascular arcs and arcades exist at the distal end of the ovarian segment or in the ligamentum suspensorium ovarii, both in man and animals, especially in the cow.

The chief vessels in size and length of the rami laterales oviductus pass to the oviducal fimbria where they become distributed in numerous fine branches to each fimbria, whence it anastomoses as a fine vascular network with similar fine branches from the distal end of the ovarian segment.

A curious feature in regard to the oviducal segment is, that at its beginning and at its ending, it is remarkably looped, *i.e.*, at the utero oviducal angle and the ligamentum suspensorium ovarii, or oviducal pavilion.

The term, helicine arteries, signifies spiral, tendril-like, short vessels emitted from larger branches; this term was introduced by that prince of anatomists, Johannes Müller—(1801–1858).

The investigations of this article show from Nature that the oviducal segment is a vascular circle. The subjects injected, dissected and x rayed, are:

1. An infant 1 day old.
2. A multipara 22 years old.
3. A multipara 30 years old.
4. A parous subject pregnant 3 months.
5. A parous subject 55 years old.
6. A parous subject 60 years old.

This, with ample other material, establishes the idea of an *ovarian vascular circle in the oviducal segment.*

THE RAMUS OVARII.

This constitutes the principle artery of the ovary. It enters the ligamentum latum, courses parallel to the distal border of the ligamentum ovarii proprium and passes along the mesovarial border to the distal pole of the ovary to coalesce with the ramus oviductus, at which point the ovarian segment

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begins. The *ramus ovarii* is the division of the oviducal segment which passes to the ovary, after which it joins with the ramus oviductus to anastomose with the ovarian segment. It extends in a remarkably spiral-looped course from the utero-oviducal angle and traverses between the blades of the ligamentum latum. In my injected, dissected, x-rayed and dried specimens, the ramus ovarii of the oviducal segment is considerably the larger artery, conveying a powerful blood-stream. It is practically the artery of the ovary. It sends five to seven branches, rami laterales ovarii, to the ovary, which divide dichotomously and assume a wonderfully tortuous and looped course.

The ramus ovarii is practically of uniform size and caliber throughout its course. It remains at a short distance from the ovary in the mesovarium. There is sometimes an extraovarian arcade from which may pass one or more short helicine arteries to the ovary. The ramus ovarii sends direct or recurrent branches to the ligamentum ovarii proprii.

The medial, or internal rami lateralis of the ovary, may arise from the uterine segment; The ramus ovarii sends external lateral branches to the ovary. Since the ovary is an important gland it has diverted the blood from various sources to itself, robbing the ramus oviductus and ramus ovarii as well as the uterine segment. The ramus ovarii, a branch of the oviducal segment as a whole, is the most spiral or looped of all the segments of the utero-ovarian artery. However, to the strong spiral state of the ramus ovarii must be added a prominent looped condition. In size and volume the ramus ovarii is the largest branch of the oviducal segment and appears to be the original direct continuation between the ovarian and and uterine segments of the utero-ovarian artery, or of the genital vascular circle, as it is one grand arcade with no point of anatomic or macroscopic division. The ramus ovarii is most spiral and looped at its proximal end, *i.e.*, at the point where it emits the rami laterales ovarii, and adjacent to its proximal coalescence with the ramus oviductus. To the dissector familiar with the genital circulation it would appear, macroscopically, that the ramus ovarii is a distinct continuation and a segment of the original utero-ovarian vascular arch formed in the Wolffian body.

The branches of the ramus ovarii are: (*a*) *The rami laterales ovarii*, the short helicine, or tendril-like arteries. The

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branches pass, in a marked spiral state, in a converging or radiating direction to the substance of the ovary through the mesovarium. The ovarian branches, spiral, looped and large, lie close together like a thick bed of veins, and this gave origin to the term, *Zona vasculosa* of the ovary. The vessels pass to the ovarian follicles around which they form a rich vascular zone or network in which the vessels have lost the spiral state. The rami laterales ovarii arise as a single trunk and quickly divide dichotomously previous to entering the ovarian substance. The rami laterales ovarii preserve a remarkably spiral course from their origin to their destination in the ovary, *i.e.*,

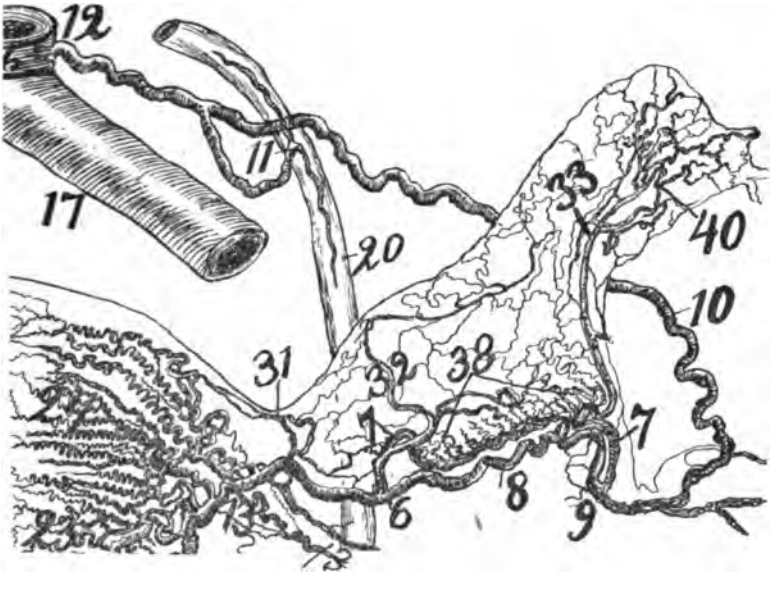

FIG. 2.—Oviducal Segment 6, 7; 7, 9; 6, 8, 9 and 13. Nullipara, 22 years old, ovarian vascular circle 6, 7; 7, 9 and 6; 89. Drawn from an x-ray taken in Dr. Pratt's X-Ray Laboratory. 9, 10, 11 ovarian segment; 6, 7, 7, 8 ramus ovarii (with some eight rami laterales ovarii); 6, 8, 9 ramus oviductus (with three rami laterales oviductus); 20 ureter; 13 is the round ligament segment severed. Note the wealth of blood supply to the proximal extremity of its oviduct. (Author).

to the ovarian follicles where they form the follicular vascular zone in an extended state. After the dichotomous division the spirality increases. The rami laterales ovarii vary in number, generally from four to seven. It appears that the spiral wind-

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ings of the ovarian branches first lose this state in the theca folliculi.

(*b*) *Rami ligamenti lati*, small, fine spiral twigs which supply the mesometrium and mesosalpinx.

(*c*) *Rami mesonephros*, supplying the mesonephritic rests.

(*d*) *Extravascular arcs and arcades*, which are located in the region of the ovary and ligamentum suspensorium ovarii.

RAMUS OVIDUCTUS.

The ramus oviductus is the principle artery of the oviduct; it is the middle salpingian; it passes from the utero-oviducal angle lateralward ventral in front of the ovarian ligament and between blades of the mesosalpinx as far as the oviducal pavilion. It is slightly sinuous medially, internally, from half an inch to one and a half inches, the lateral segment being quite spiral; it remains a finger's breadth distal to the oviducal border and passes dorsal to the mesonephron, to which it furnishes branches; it supplies the oviduct and mesosalpinx; its lateral branches increase in number until it reaches the pavilion, where it anastomoses with the ovarian segment; its branches may be spread out on the pavilion, subdividing on the fringes and, finally, unites itself to several ramifications from the ovarian segment.

The ramus oviductus is an artery of a less tortuous state and manifest less in genital function than the uterine segment. It lies in the limited transparent cellular tissue between the blades of the mesosalpinx; it courses sinuously parallel to the oviduct, about one inch distal to its border and passes posterior to the mesonephros; it is generally accompaied by two veins. The branches of the oviducal segment are:

1. *Rami laterales oviductus*, which in general are three in number: (*a*) One branch passes to the oviduct about an inch from its distal end; (*b*) another practically supplies the oviducal ampulla, and (*c*) a third supplies the oviducal pavilion. It may be remarked that the oviducal pavilion is so richly supplied by numerous fine vessels from this artery that some have thought it possessed erectile tissue, a theory at present abandoned. The three main rami laterales oviductus—proximal, middle and distal, previous to arriving at the oviduct bifurcate, the resulting twigs are directed, some to the right and some to the left to anastomose with each other. From this anastomosis results arterial arcs and arcades in the mesosal-

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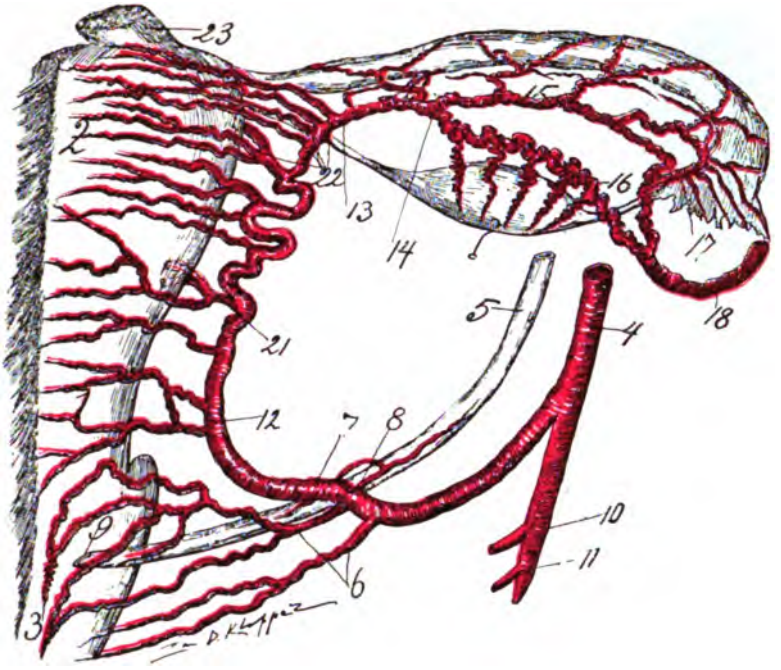

FIG 5

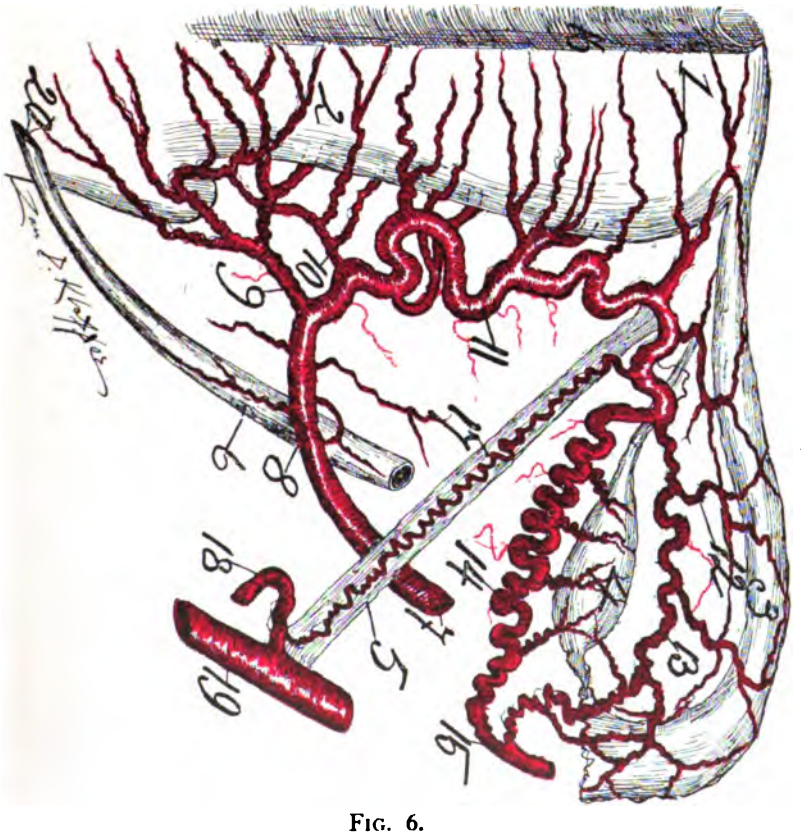

FIG. 6.

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pinx which supply the distal, middle and proximal segments of the oviduct. It resembles in a smaller scale, however; the arterial arcs and arcades of the vasa intestini tenuis in the mesenteron. The ramus oviductus is of uniform caliber from end to end.

The *distal lateral* branch of the oviducal segment anastomoses with the ramus fundi, the *proximal lateral* branch with the ovarian segment indicating that the utero-ovarian artery is designed to supply the whole of Miller's duct, the vagina, uterus, oviduct and ovaries. Considerable interest is attached to the proximal lateral branch or proximal ramus lateralis oviductus of the oviducal segment as it supplies in a rich and luxuriant manner the oviducal ampulla and pavilion—the receptaculum seminis, or probable depot of conception. This proximal lateral branch of the oviduct is divided into numerous spiral terminal twigs, each fringe of the pavilion being liberally and richly supplied by them. The major oviduco-ovarian fringe also receives a wealthy supply from the same source. In some cases the ramus ovarii sends a branch or branches to anastomose with the proximal lateral branches of the oviducal segment, still more enriching the blood supply to the oviducal pavilion. The oviducal artery preserves a slight spiral but sinuous course.

Not infrequently the ramus oviductus sends off a recurrent branch which supplies the distal end of the oviductus isthmus and the uterine fundus. The oviducal pavilion is so well supplied by the vast numbers of fine arterioles that under the x-ray they resemble villous tufts in each one of the fimbria of the pavilion (see Figs.). From general dissection the ramus fundi belongs to the rami laterales uteri and not to the ramus oviductus.

2. *Rami laterales ovarii longi* are generally three small sinuous branches prassing from the ramus oviductus to the ovary and extraovarian arcades.

3. *Rami mesosalpinx* are quite small vessels supplying the mesosalpinx.

4. *Rami mesonephros* are minute branches passing to the mesonephros.

The x-ray specimens demonstrate that the ramus ovarii and ramus oviductus may cross and recross each other, showing no definite or fixed position as regards the mesometrium.

The ramus oviductus traverses between the blades of the

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mesosalpinx at a considerable distance from the distal border of the oviduct. This resembles that of the dog. In the cat it lies against the uterine horn. In well-injected infants one can count three long helicine arteries passing from the ramus oviductus to the ovary. They are scarcely spiral, simply flexuous. The ramus oviductus sends chiefly three large rami laterales to the oviduct—to the isthmus, ampulla and pavilion. However, in some cases one or more long, large branches pass to the ligamentum latum from it. Small rami laterales oviductus pass to supply the mesosalpinx. The branch to the pavilion is often large and rich in fine divisions. In general, the rami laterales oviductus pass at right angles from the ramus oviductus to meet the anterior and posterior faces of the oviduct at right angles, forming on those faces an anastomotic vascular network, especially on the ampulla and pavilion.

Ramus oviductus constitutes the numerous vessels which may pass to the ampulla, pavilion, fimbica ovariana, isthmus, ovary, mesosalpinx and mesometrium. The subperitoneal branches of the oviducal artery are very rich in fine anastomoses.

The rami laterales of the oviducal segment, like all the rami laterales genitales, form an anastomosing network of notable compactness and solidity.

The ramus oviductus is located ventral, anterior, to the ramus ovarii.

The rami laterales oviductus are more flexuous than the ramus oviductus. The rami laterales peritonei issuing from the ramus oviductus are very rich.

In a well-injected spare mesosalpinx one can easily observe the ramus oviductus in size and outline.

THE ROUND LIGAMENT SEGMENT.

Ramus Ligamenti Teretis.

This is a large, very spiral division of the oviducal branch. It passes through the ligamentum rotundum in a marked tortuous state to anastomose with the deep epigastric (external iliac) artery. The anastomoses of the artery of the round ligament with the deep epigastric is an additional blood supply to the internal genitals beyond the utero-ovarian artery.

The artery of the round ligament is sufficiently large to require a ligation in hysterectomy. It is not easy to decide in

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which direction blood flows in the artery of the round ligament at its uterine end, from the fact that the middle portion of the artery is the most feeble and smallest in caliber; also, from this fact the origin and destination is obscure; I shall de-

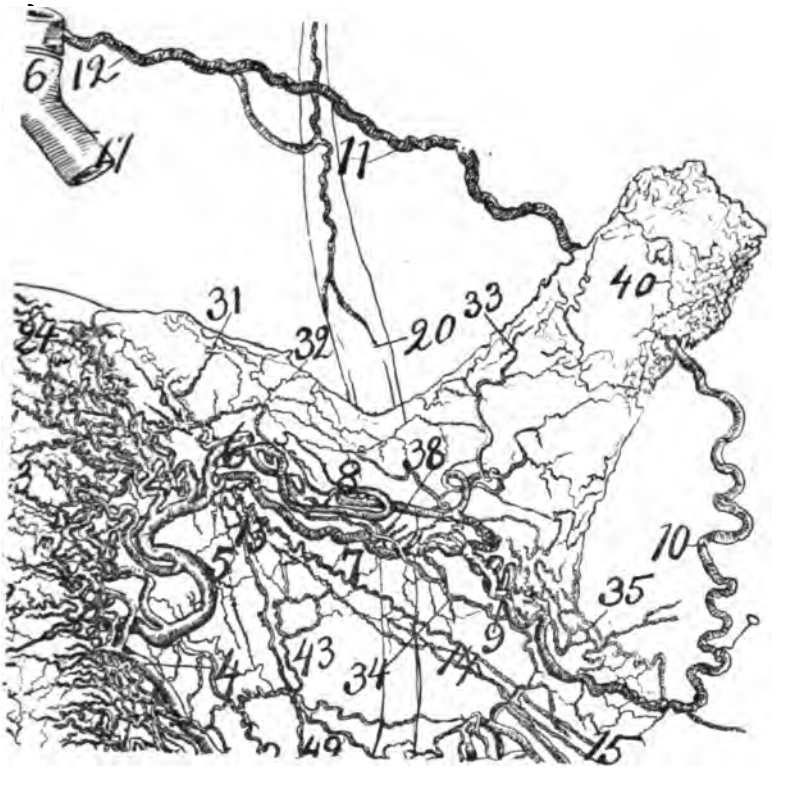

FIG. 3.—The Oviducal Segment 6, 8; 8, 9; 6, 7, 9 and 13, 14, 15. Ovarian vascular circle 6, 8; 8, 9 and 6, 7, 9. Parous woman, 30 years old. Drawn from an x-ray taken in Dr. Pratt's X Ray and Therapeutic Laboratory. 6, 8, 9, 6, 7, 9 the ovarian vascular circle; 6, 7, 7 ramus ovarii (presenting four rami laterales ovarii); 6, 8, 8, 9 ramus oviductus (with three rami laterales oviductus); 9, 10, 11 ovarian segment; 4, 5, 6 uterine segment; 13, 14, 13 round ligament segment; 20 ureter; 43 and 34 extravascular arcades. (Author).

signate the deep epigastric as the origin. The ramus ligamenti teretis arises from the deep epigastric, or by a secondary root of the ileo-circumflex and one branch descends in the inguinal canal, but the chief branch passes tortuously through

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the center of the round ligament; it is quite flexuous, or rather looped.

In anastomoses with the ramus oviductus it communicates with the inferior epigastric, furnishing a direct route from the mammary glands to the uterus for the sympathetic nerves to manifest the sympathetic phenomena between the uterus and mammary glands.

The segment of the round ligament is very feeble in blood current in the middle portion; at the epigastric end the circulation is quite vigorous.

The segment arises from the deep epigastric generally by one branch or by two, which unite and pass into the center of the round ligament; after entering this ligament it quickly divides, first into two branches, and, as it passes toward the uterus, a third branch is given off. The three branches course in a very sinuous, looped condition in the center of the round ligament for about two inches whence they dwindle into one central looped branch.

The proximal end arises from the ramus oviductus as a single branch; it soon divides into two branches, one of which, the smaller, passes to the origin of the round ligament on the fundus of the uterus; the other, the main trunk, passes to the round ligament when it immediately makes four to six loops which lie close to each other; it then emits one or two branches which course sinuously parallel with the main trunk for one and a half inches, whence they dwindle into one tortuous branch lying in the center of the round ligament meeting the distal portion from the deep epigastric. The proximal and distal ends of the round ligament segment consists of a central tortuous trunk with one or two accompanying parallel, looped branches; the central portion consists of a single looped trunk lying in the center of the ligament. The proximal and distal ends are larger calibered, while the middle portion is small calibered and can only conduct a feeble stream, even in the pregnant state.

By injecting the round ligament segment during gestation many smaller arteries spring in view that are not seen during the resting state, they are too fine to receive the injection fluid. It would appear that the arc composing the round ligament segment is gradually fading out of existence, especially in the middle portion. Since the middle portion of this segment is very small in caliber the blood current is very feeble in the

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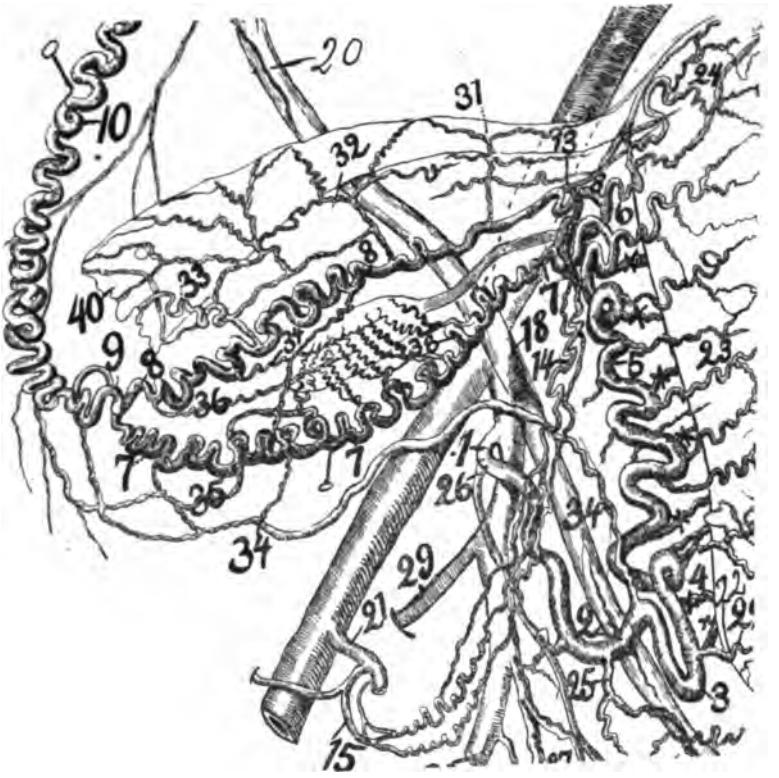

FIG. 4.—Oviducal Segment 6, 8–8, 9; 6, 7–8, 9+13, 14, 15. Adissection of the right side (oviducal segment) of the utero-ovarian artery from a subject pregnant three months. It was injected from the right common iliac and dissected under alcohol. Spiral segment (utero-ovarian artery) 1, 2, 3, 4, 5, 6, 7–7, 8–8, 9, 10, 11, 12–13, 14, 15; straight segment; abdominal aorta; common and internal iliac. Divisions of the spiral segment: (1) Pelvic floor segment 1, 2, 3, 4; (2) uterine segment 4, 5, 6; (3) oviducal segment 6, 7–7, 8, 9–8, 9; (4) ovarian segment 9, 10 to abdominal aorta; (5) round ligament 15, 14, 15; rami laterales uteri 22, 23, 24; rami laterales oviductus 31, 32, 33; rami laterales ovarii 38; extraovarian arcades 34, 35, 36; cervico-vaginal artery 22; ureter 20, 18, 2; vaginal arteries 25, 26. Important locations of the the spiral segment: Arterio-ureteral loop 2; cervical loop 3; arterio-ureteral crossing 2, 18; cervico-vaginal artery 22; exsanguinated zones (*a*) central longitudinal axis, (*b*) lateral cervical border, and (*c*) fundus. Rami laterales oviductus longi (long helicines) 34, 36; rami laterales ovarii (short helicines) 38. The oviducal segment practically forms what I term the " ovarian vascular circle) 6, 8–8, 9; 6, 7–7, 9. (Author).

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resting state, making it difficult to decide the direction of the blood current in the segment. The round ligament is feebly supplied in the resting uterus, and even in the puerperal uterus, and hence does not give a large supply.

SUMMARY OF THE OVIDUCAL SEGMENT OF THE UTERO-OVARIAN ARTERY.

1. *The ramus ovarii* is the chief artery of the ovary—emitting generally five lateral branches (rami laterales ovarii) to supply the ovary.

2. *The ramus oviductus* is the chief artery of the oviduct—emitting generally three lateral branches (rami laterales oviductus) to supply the oviduct.

3. The oviducal segment is practically a vascular circle, which I term the *ovarian vascular circle.*

4. The oviducal segment begins at the utero-oviducal angle and terminates at the distal extremity of the ovarian segment.

5. In size and spirality the ramus ovarii is the main artery of the oviducal segment. It is, perhaps, the original genital vascular arch of the Wolffian body.

6. The ramus ovarii emits the five short helicine, and the ramus oviductus emits the three long helicine arteries to the ovary.

7. All the helicine, or tendril-like, arteries are spiral and practically parallel to each other.

8. The ramus ovarii is located at the distal border of the ligamentum ovarii proprium and mesovarium and between the blades of the mesometrium.

9. The ramus oviductus is located between the blades of mesosalpinx about one inch from the distal border of the oviduct.

10. There exists in the region of the ovary extravascular arcs and arcades which may anastomose with several or all of the five segments of the utero-ovarian artery, indicating the *wide extent* of ovarian blood supply.

11. The oviduct may be extirpated by severing the lateral branches (rami laterales oviductus), only leaving *in situ*, unsevered, the ramus oviductus and ramus ovarii.

12. The ovary may be extirpated by severing the lateral branches (rami laterales ovarii), only leaving *in situ*, unsevered, the ramus ovarii and oviductus.

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13. In short, the ovary or oviduct may be extirpated without severing either branch of the oviducal segment.

14. The ovary (a progressively functionating organ) having less-marked age and functional relations than the uterus and oviducts (the menstrual organ—a periodically functionating organ), the oviducal segment will have less marked age and functional relations than the uterine segment.

15. The oviducal segment, since it almost entirely supplies the ovary from the periphery of its vascular circle, is practically the segment of the ovary.

16. The oviducal segment begins at the middle and ends at the proximal bifurcations of the utero-ovarian artery, both bifurcating ends vary as to location and appearance, hence the size of the ovarian vascular circle varies within wide limits.

17. All the rami laterales of the oviducal segment form a solid, compact anastomoses throughout the entire mesosalpinx and mesometrium, so that at any point of the oviduct (oviducal gestation), ovary (ovulation), the mesometrium (tumors) stimulation, may entice the chief volume of blood to one point.

18. The ramus ovarii and ramus oviductus are practically of uniform caliber from beginning to end.

The ramus ovarii sometimes forms one extraovarian arcade which may emit none, some or practically all the arteries of the ovary, rami laterales ovarii.

The utility of the extraovarian arcs and arcades is to supply, doubly sure, the ovary, the essentual central sexual organ of women with a rich supply of blood. The extraovarian vascular arcs indicate the significance of the ovary in the animal economy. From my dissections and x-rays the largest branch forming the extraovarian arcs and arcades is that arising from the pelvic floor segment immediately internal to the distal arterio-ureteral crossing (Fig., No. 38).

Finally, the significance and importance of the ovary is predicated by the anatomic data that the ovarian vascular arcs and arcades are solidly and compactly anastomosed to every segment of the utero-ovarian artery.

This is an ultimate proof of my original claim that the genital vascular system, with its arcs and arcades, was primitively formed in the Wolffian body and have simply traveled distalward into the lesser pelvis from erect attitude.

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AGE RELATIONS OF THE OVIDUCAL SEGMENT.

The age relation of the ovary is much less than that of the oviduct and uterus. The age relations of the ovary is not so marked as that of the menstrual organ (uterus and oviduct) because the ovary begins to ovulate before birth and it ovulates until the ovarian tissue is practically worn out in the sixties. The menstrual organ (uterus and oviduct) is an organ of of limited life with definite age relations, hence its blood supply varies markedly at different periods and functions of life.

Since the ovary is exacerbated only at puberty when the utero-ovarian artery springs mightily into active and functional life, the ramus ovarii may not be expected to present such phenomenal age relations as the ramus oviductus. Yet, since the ramus ovarii and ramus oviductus are branches of a single trunk, the ovarian segment, it is difficult to discriminate age relations more in one segment of the of the utero-ovarian artery than in another. Hence, we will ascribe the following age relations to the oviducal segment, viz.: (*a*) That of pueritas, childhood life, the quiescent phase; (*b*) that of pubertas, the developing crisis; (*c*) that of menstruation, a functional crisis; (*d*) that of gestation, a functional crisis; (*e*) that of puerperim, a functional crisis, and (*f*) that of senescence, a return to the quiescent phase of childhood.

[*For Figs. 5 and 6, See Colored Plate.*]

FIG. 5.—Oviducal Segment 14, 16 and 14, 15, 17. Ovarian vascular circle 14, 16, 18 and 14, 15, 17, 18. Woman, aged about 55 years; front view. I carefully dissected the vessels, drawing them in accurate relations, after which model Mr. Klapper drew. A myoma about the size of a pigeon's egg existed on the fundus, the pedicle 23; this tumor made the five fundal arteries remain very large. Cervico-vaginal 1, lateral corporeal branches 2, very large vaginal branches (arterio azygos vaginæ) 3, hypogastric 4, urete 5, vaginal arteries 6, distal arterio ureteral crossing 7, arteria ureteris 8, ureteral opening 9, branches from hypogastric 10 and 11, exit of cervico-vaginal 12, uterine segment immediately before it divides into the oviducal branch (15) and ovarian branch (16) 13, point of division of uterine segment 14, rami laterales oviductus 17, 20, ovarian segment 18, lateral coporeal branch which divides dichotomously, sending a brance to anterior and posterior uterine surface 21, rami fundi 22. The corporeal and cervical branches were atrophied, the vaginal arteries were not. The fundal branches were enlarged from myomatous irritation.

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FIG. 6.—Oviducal Segment 13, 14, 17; the ovarian circle surrounds the ovary. Drawn from a subject about 60 years old. Atrophic ramus fundus 1, ramus cervicis 2, rami laterales oviductus 3, ovaries receiving its helicine arteries from the ramus ovarii 4, artery of round ligament arising distal to ovarian vascular cord 5, ureter receiving its ramus ureteris 6, uterine artery 7, distal artero-ureteral crossing 8, cervico-vaginal 9, cervical 10, uterine segment 11, rami laterales of the ramus oviductus 12, ramus oviductus 13, ramus ovarii 14, fragment of ovarian segment 15, peritoneum of the uterus dissected and turned medianward 16, round ligament artery 19, deep epigastric 18, external iliac 19. Note distance of the artery from the uterus and oviduct and its atrophic lateral branches. The ramus ovarii alone retains its marked spirality. (Author).

Hour-Glass Contraction of the Uterus During the Second Stage of Labor.

BY GRANVILLE E. DICKINSON, M.D.,

UPPER FAIRMOUNT, MD.

THE causes which render labor difficult, impossible or dangerous, and which demand the intervention of art are numerous. Some of these causes are very plain, while others are very obscure, even to the experienced accoucheur. Sometimes lack of sufficient pain to dilate the cervix renders the first stage tedious, frequently the cervix is rigid; sometimes we have wrong presentations and positions, and monstrosities to deal with. We also have feeble and slow contractions from an excessive distention of the uterine walls, dependent upon dropsy of the amnion, or the presence of two or more children in the uterus, this over-distension renders the uterine walls thinner than usual and lessens their contractile power.

In primiparæ particularly, the second stage is usually tedious, owing to the resistance of the perineal muscles, but the cause to which I wish to refer particularly at this time is one which I have never known to be referred to by any writer on the subject except one case, which I reported a few years ago to the Medical and Chirurgical Faculty of Maryland.

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All the writers refer to spasmodic contraction of the internal orifice, and the irregular contractions of the body of the uterus—or hour-glass contractions, during the third stage of labor, but none refer to it as a cause which renders the natural delivery of the child difficult or impossible. We all know it frequently makes the natural delivery of the placenta impossible. The cause of this spasmodic contraction in either the second or third stage is very obscure. Some writers claim the predisposition exists in the organ itself, but it may be caused by improper frictions or manipulations, or the abuse of stimulating remedies, particularly ergot. They are more often found in twin pregnancies than others; probably never found in the second stage except in twin labors.

The fact that it is usually very hard to reach the spasmodic contraction with the finger, if the head is in the pelvis, renders the diagnosis difficult, and may happen much more frequent than we have any idea.

The case to which I will now refer is a very interesting one in two or three respects: The patient was a strong, healthy negress, the mother of several children; each previous labor had been normal and comparatively easy; this one lasted about sixty hours. When I reached the house the midwife who was in attendance informed me that the first child, a large healthy one, had been delivered forty-eight hours (breech presentation), since that time the woman had been having strong pains but the second child had not advanced, and was supposed to be dead.

On examination I found a roomy pelvis, vertex presentation, the head above the superior strait and movable in any direction. Although the woman was still having strong pains and the os fully dilated, I introduced my hand with very little difficulty and could carry it all around the head, even during the strongest pains. I suspicioned hour-glass contraction, having seen a case before, which was almost exactly the same. The head being easily movable I carried my hand up until I felt the body of the uterus firmly contracted around the neck of the child.

I administered chloroform and tried to dilate the spasmodic contraction, failing in this, I applied the forceps with very little difficulty, and by making constant traction I had very little trouble in delivering a strong healthy child about fifty hours after the first. The spasmodic contraction then

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seemed to become more rigid, although the woman was thoroughly under the influence of the anesthetic; this, of course, made the natural delivery of the placenta impossible; one finger would not pass the stricture, but I finally succeeded in dilating it sufficiently to get my hand through, when I grasped the placenta and with very little trouble delivered it.

In a few hours after the woman was as bright as could have been expected had her labor been natural and easy. There was only one placenta, one bag of waters, and the space between the attachment of the two cords was about one inch. One of the most interesting features of the case is the fact that the second child lived in the uterus about fifty hours after the delivery of the first child, with the complete discharge of the amniotic fluid, and attached to the same placenta as the first. The placental end of the first cord had been tied by the midwife. Both children were large and apparently healthy.

In this case there was certainly no predisposition, as several previous labors had all been normal and comparatively easy, no indications of hour-glass contractions during either stage; no ergot or other uterine stimulants had been administered. I am sure there had been no improper frictions as the old midwife knew nothing but to let Nature do the work, and when Nature failed call upon the physician.

Extrauterine Pregnancy.

BY G. G. R. KUNZ, M.D.,

ST. LOUIS, MO.

ASSISTANT SUPERINTENDENT FEMALE HOSPITAL.

THE patient, Mrs. H., "C.," aged 32 years, entered the Female Hospital January 2, 1902. She had borne five children; all were delivered with instruments. At the time of the third delivery she was badly lacerated and was compelled to remain in bed for two weeks. The last delivery, the fifth, occurred two years ago, and was a miscarriage at six months; since then she has never been well, being weak and suffering with a profuse, dirty-grayish discharge.

Read before the Medical Society of City Hospital Alumni, March 6, 1902.

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Her present trouble began in July, 1901, when menstruation was very scant, but the next month it was very profuse, and was accompanied with much pain and distress. In the latter part of this month and in the early part of September she had slight nausea.

About the middle of September she felt a sensation as though something had "broken" in the lower part of her abdomen on the right side; it caused her sudden and severe pain, dizziness, and a great weakness; this latter symptom lasted for sometime.

During the first week of December, a profuse hemorrhage took place from her vagina; at first she thought that it was the return of her menstrual flow, which she had not had since the early part of August, four months previous. She did not think she was pregnant, although at that time her breasts were slightly enlarged.

On entering the hospital her condition was as follows: Bleeding from the vagina (which hemorrhage had been persistent since the first week in December), pain in the lower part of the abdomen and also in the back, anorexia, occipital headache and a feeling of general malaise and weakness.

Physical examination disclosed that the patient was somewhat emaciated, skin of a sallow color, conjunctivæ pale, heart and lungs apparently normal, breasts slightly enlarged and secreting; the lower part of the abdomen was distended by a large, firm, symmetrical tumor, springing from the pelvis and extending to within a short distance of the umbilicus, and situated slightly to the right of the median line; palpation of it caused considerable pain.

Vaginal examination revealed the cervix softened, enlarged and badly lacerated, the tumor filling the upper part of the pelvic cavity and apparently continuous with the cervix. Careful digital examination revealed a body the size and shape of a slightly enlarged uterus, posterior to the uterus and slightly to the left of the median line; this was also made out rectally, but so closely adherent was this that it seemed continuous with, and a part of, the larger mass.

A diagnosis of a probable extrauterine pregnancy was made, but it was decided to keep her under close observation a while longer before operating.

To stop the severe hemorrhage which came on, the vagina was packed; this developed, six hours later, severe labor-like

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pains; later the pack was removed, it was saturated with blood but contained no shreds of decidua.

The operation was performed January 29th, by Dr. Witherspoon, who had been asked by Dr. Hawley to see the case and to operate.

Under chloroform, he first carefully dilated the cervix sufficiently to admit of the introduction of the finger into the uterine cavity; this was then thoroughly explored and found to be empty; then, by a celiotomy, he removed this specimen which I have the pleasure of showing you this evening.

It was, evidently, primarily a tubal (ithmial) pregnancy which ruptured through the floor of the tube into the broad ligament.

On its surface you can see the stretched right tube and ovary. To fully satisfy myself that it had ruptured and was secondary, I requested Dr. Fisch to examine sections of its thick fibrous covering, he very obligingly did so and pronounced it as being of the broad ligament.

The patient made a good recovery.

[FEMALE HOSPITAL.]

The Mississippi Valley Medical Association. — The Chairman of the Committee of Arrangements for the Twenty-eight Annual Meeting of the Mississippi Valley Medical Association, Dr. A. H. Cordier, has announced the dates of the next meeting in Kansas City, Mo. as October 15, 16 and 17, 1902.

The President, Dr. S. P. Collins, of Hot Springs, Ark., has announced the orators for the meeting: Dr. C. B. Parker, of Cleveland, Ohio, to deliver the address in Surgery and Dr. Hugh T. Patrick, of Chicago, the address in Medicine, selections which will meet with the approval of every physician in the Mississippi Valley.

A cordial invitation is extended to every physician in the United States, but especially of the Valley, to attend this meeting and take part in its proceedings. Titles of papers should be sent to the Secretary, Dr. Henry Enos Tuley, No. 111 West Kentucky street, Louisville, Ky., at as early a date as possible to obtain a favorable place on the program.

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LEADING ARTICLES.

THE STIGMATA OF DEGENERACY.

Probably too much stress has been laid on degeneration as a biologic process in the production of human imperfections; so much is heard on all sides about this factor that it creeps almost imperceptibly into all etiologic considerations. Any inherent weakness, physiologic or anatomic, is ascribed to defective development and is classified among the stigmata of degeneration. There can be no question that there exists a tendency to overstep the proper boundaries of this conception, when carefully defined.

But here arises the first difficulty—namely, the definition of degeneracy. According to Roy Lankester, it is a gradual change of structures so that adaptation to the varied conditions of life becomes imperfect. From this definition it is obvious that acquired as well as hereditary characters may enter into its semiology. Others seem to limit the term to a hereditary degradation of type. Some will report only anatomical defects as stigmata; others collect a vast array of physiologic anomalies to be placed in this catagory.

Since the concept was made popular by Max Nordau an increased amount of study has added little to the investigations of Lombroso. As long as authorities adhere strictly to anatomical defects, the agreement is fairly perfect; but as soon as other abnormalities are discussed, a marked difference arises among those engaged in the discussion.

The stigmata which are invariably given are anatomic anomalies, either hereditary or depending on a congenital alteration of structures, and may be briefly stated: 1, Arrested development of parts of the brain or cranial nerves; 2, deformities of the cranium, ear, jaw, palate, teeth, limbs, fingers, etc. Then there is certain general type, called the juvenile type, which is laid down as degenerate.

While these anatomic features are clear enough, when an attempt is made to extend them in the realm of physiology, too many changes, the origin of which are obscure, are encountered to make an exact selection of symptoms, to be placed in this category, possible.

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To be strictly accurate in using the term degenerate, we simply imply that a degradation of the normal type exists; yet this term should not be used in etiologic considerations, particularly when physiologic abnormalities are discussed, whose exact origin is obscure. Nothing is gained by determining that a certain stigma of degeneracy exists, except to indicate an imperfect individual. The facts may indicate a variation from the normal and these may be so indicated; but it is a very serious error to make this variation a distinct biologic process.

THE ETIOLOGY OF PUERPERAL ECLAMPSIA.

There are few affections, either acute or chronic, to which an infectious origin is not ascribed by some investigators; it is reasonable, therefore, that such a specific micro-organism should be sought in puerperal eclampsia. In fact, Stroganoff has just put forth the theory that eclampsia is an acute infectious disease, which definitely terminates in one or two days in recovery if the patient does not succumb to the severity of the muscular contractions. Not many obstetricians are prepared to accept this view, the majority favor the the theory of autointoxication dependent, principally, on deficient elimination. It is believed that there is an accumulation of maternal and fetal catabolic products in the circulation, finally resulting in an increase of the toxicity of the blood, which terminates in irritation of the cortical motor cells.

In addition to inadequacy of the kidney the liver is supposed to be deficient in action. In fact, Dienst made experiments in animals and proved that slight destruction of part of the liver and one kidney in a pregnant rabbit results in symptoms very similar to eclamptic seizures in the woman. Schmorl has advanced the hypothesis that the abnormal tissue metabolic products arise in the placenta.

And here we approach the great controverted question, upon a definite decision of which, the treatment will become more uniform and definite. Admitting that the disease is due to toxic leucomains which are insufficiently eliminated, the question arises: Have they their origin in the structures of the mother or those of the fetus, including the placenta. If their origin is exclusively in the fetal structures, normal or diseased, an indication which is not to be gainsaid, would be to remove the contents of the uterus at once. But if the origin is in the

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maternal tissues the induction of abortion might do harm and little good.

An interesting contribution to this subject has recently been made by Braitenberg (*Wiener Klin. Woch.*), who studied forty-six cases, and concludes that no theory can apply to all cases; that eclampsia must not be considered a definite specific disease; that in this respect it must be considered analogous to the eclampsia of a child, and that it depends on a great variety of causes and conditions.

INTERMITTENT CLAUDICATION.

This term was applied to intermittent paroxysms of pain occurring n the calf of the leg by Charcot in 1858. The attacks recur at very irregular intervals and are frequently accompanied by vasomotor phenomena. Walton and Paul recently have described the disorder under the name angina cruris, and report a series of cases. They call particular attention to the fact that the pedal arteries are pulseless in the great majority of cases; they believe the painful paroxysms are of vascular origin, and result from vascular spasm coupled with increased blood pressure acting on vessels partially occluded (atheroma, aneurysm). Judging from the increasing number of cases reported, the disorder is by no means rare. These violent cramps, no doubt, are not diagnosticated even when the attention of the physician is called to them; but most commonly the person affected will not consult a physician, since the pain passes off in a few minutes, and the limb seems perfectly well. Several allied conditions have been described, and Raynaud's disease probably has a similar origin Indeed, Levy (*Philadelphia Medical Journal*) has reported a case of intermittent claudication which terminated in gangrene. Erythromelalgia is another affection which must be considered to possess a certain relationship to angina cruris. So also are the intermittent forms of limping, which have been described by Goldflam.

It is sufficient to remember that there is an affection characterized clinically by painful cramps in the leg, and associated with impeded circulation in the arteries; the pain comes on after exercise, but often occurs at night; redness, swelling, hyperalgesia may occur; in this respect simulating erythromelalgia; and, finally, that these symptoms depend more or less on disease of the arteries.

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The study of this disease opens certain other possibilities which have a more or less direct bearing on the subject of cramps. First of all, is that dreadful affection known as angina pectoris. Is the pain of the heart dependent on the same pathologic state? It is known that a narrowing of the coronary arteries from atheroma and other causes is the most frequent lesion in this disease; it follows, therefore, that a spasm of the leg and the heart may be the same process depending on a similar cause in different parts of the body.

Another interesting question is raised in regard to the painful spasms that occur in some of the acute intestinal diseases, *e.g.*, cholera nostras. It is known that very painful cramps in the calf of the leg is a common symptom of this affection; in typhoid fever, particularly when cold baths are given, painful cramps also are present. Do these cramps have the same pathologic process? It has usually been supposed that some of these pains are due to violent muscular contractions, and it is difficult to establish the actual condition present.

IMMUNITY OF THE ADULT.

As we have pointed out in a previous article, the problems of immunity are growing in complexity, and new phases of the subject are continually presenting themselves. One of the most interesting questions, the solution of which may lead to important practical results, is the eventual occurrence in the adult of immunity to many diseases to which the child is very susceptible. It is known that in most instances this immunity is acquired by passing safely through an infection. This is true, especially of measles and pertussis, but less obviously manifest, in most individuals, are scarlet fever and diphtheria. But many persons deny having had some of these diseases and yet appear perfectly immune to them; at least, repeated exposures does not lead to an infection. The question arises why these adults resist the onslaught of the disease.

It has been suggested that certain individuals are congenitally immune to certain infections, but it is not at all clear in what particular somatic change this immunity consists.

There is a growing tendency to ascribe this immunity of adults to fleeting attacks of the disease which is not recognized, or infection by a micro-organism somewhat related to the specific bacterium

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It is impossible to even surmise the great variety of infections which are successfully overcome during childhood; some of these may be the specific disease in disguise. Scarlet fever, for instance, is much more frequent than the exanthem would indicate; since many anginas are probably caused by the specific micro-organism of scarlatina. A person immune to scarlet fever may have had a mild scarlatinal angina during his childhood.

Similarly, many other diseases may have such a mild course as to pass unnoticed, or to be considered as something different from the disease against which it induces a specific resisting power. Pertussis is one of these. A very persistent or even mild attack of coughing may be diagnosticated as a "cold," or bronchitis; and yet by the presence of a specific germ the specific changes against whooping-cough may result.

Considerable interest has recently been taken in the induction of immunity to diphtheria. Behring has advanced the theory that an antitoxin is manufactured by the ubiquitous pseudo-diphtheritic bacilli in the upper air passages. The affection may be a simple catarrh of the nasal cavities, simple angina or ozena; but a certain amount of toxin enters the circulation and this brings about the manufacture of antitoxin. Behring affirms that the non extermination of the human race by diphtheria can be explained only on the assumption of a special factor in addition to the germ that makes the latter dangerous, or that some individuals acquire immunity to this disease. The latter condition is probably true.

Not only the common diseases of childhood must be considered in this connection, but other infectious diseases to which the individual has a permanent immunity. The frequent Widal reaction in normal persons who have never had typhoid fever, suggests that certain processes may take place in the organism producing similar changes as typhoid fever, and, yet not recognizable as this disease. The several forms of the bacterium coli communis may cause a gastroenteric disorder or a "bilious" attack, and still intoxicate the body sufficiently to produce the immunity. This is plausible on the ground that this germ is often so nearly related to the typhoid bacillus and may cause similar effects.

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EDITORIAL COMMENT.

The Nascent State.

At the last meeting of the American Electro-Chemical Society at Philadelphia, C. J. Reed read a paper in which he attacked the well-known hypothesis that certain elements at the moment of liberation from a molecule possess extraordinary chemical activity. This condition of the element has been termed the "nascent state." He declares the extraordinary effects of hydrogen, for instance, when liberated from some combinations can best be explained by supposing the element with which it combines may be reduced at the same time.

The arguments brought forth by this author are not sufficient to overthrow the theory. Both theoretically and practically the nascent state of hydrogen must be considered a chemical fact.

Etiology of Erysipelas.

However firmly established a certain truth may be, someone will have the temerity to attack it: however cherished some of our opinions, someone is sure to make light of them. It was supposed that the streptococcus of Fehleisen possessed once and for all time, positively and incontrovertably, the place as the specific germ of erysipelas. But Pfahler finds diplococci in all cases and very rarely streptococci (*Philadelphia Medical Journal*). He claims to upset the views of the older bacteriologists and offers a new micro-organism as the new cause. But his studies lose interest, when it is remembered that Fehleisen's germ so frequently assumes the form of a diplococcus, and, consequently, until Pfahler can find grounds other than morphologic, his discovery will attract meager attention.

The Association of American Physicians.

This association held its seventeenth annual meeting at Washington, D. C., April 29 and 30, 1902. The papers read demonstrated that America is coming to the front in experimental investigations. The high order of the work presented can scarcely be surpassed.

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The American physician who takes pride in the achievements of American scientists and who has confidence in their ability, will derive extreme satisfaction in reading the report of the proceedings. That researches in the intricacies of human diseases is being pursued with a persistent and indomitable zeal there can be no doubt, and in a few years more, the stigma which has been placed on us, that we can do nothing for medical progress, will unceremoniously be removed.

Justus' Test.

New diagnostic tests are offered daily, but few withstand the test of time. A certain author claims a test to be pathognomonic when others appear and demonstrate its unreliability. Such has been the case with Kernig's sign of meningitis. It was at first exploited as a pathognomonic sign, but, at present, it is known that the sign appears in other conditions.

Now, a few writers have made careful examination of Justus' test, and have demonstrated that it is often fallacious and doubtful. It has been urged that a chancre could be differentiated from a chancroid by this means, but Tucker and Huger (*Philadelphia Medical Journal*), working independently, come to the conclusion that the test is unreliable. It is positive in certain cases of non-syphilitic lesions, and absent in many cases of undoubted syphilis.

It will be recalled that Justus' test is a sudden drop in the percentage of hemoglobin after inunction with mercury.

Toxin in the Blood of a Horse Infected with Tetanus.

An interesting contribution to the subject of tetanus has been made by Meade Bolton and Carl Fisch. Blood was drawn at intervals of twenty-four hours from a horse infected with tetanus. It was ascertained that the tetanus toxin exists in the blood several days before the appearance of symptoms; it gradually increases in amount until symptoms develop; then there is a gradual decrease. At the time of death little or no toxin is demonstrable in the blood.

The interesting practical deduction from this experimental investigation is that curative injections of antitoxin can be effective only when injected before symptoms of tetanus develop. And since this

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is impossible in the vast majority of cases, as the diagnosis is uncertain, we should not expect much from injections of the serum, at least in the removal of the tetanic symptoms.

A clinical problem, which should be solved, is to discover a sign of tetanus before the clinical symptoms appear; then can we expect definite curative results from the tetanus antitoxin.

Tetanus Following Vaccinia.

After an exhaustive study of tetanus following vaccination, Wilson (*Journal American Medical Association*) is unable to reach any very positive conclusions in regard to the origin and mode of the infection. Judging from the prolonged incubation period in most cases, the conclusion is rational, that the tetanus bacilli entered the wound subsequent to the vaccine inoculation. It depends on the susceptibility of the person, and on the symbiosis of micro organisms present.

It is certain that tetanus bacilli can be in the virus, they may be on the skin and they may finally enter the wound after inoculation. The lesson is that proper antiseptic precautions must be taken in all the details of the operation and treatment; and, by all means, all the virus should be carefully tested for tetanus bacilli before its distribution.

DIAGNOSTICS.

In Charge of A. LEVY, M.D.

Pancreatic Disease.

Wm. S Thayer (*American Medicine*, March, 1902) says the peculiarly remote and hidden situation of the pancreas makes it exceedingly difficult to detect changes in position, size and secretory ability. The subject is considered under three headings:

1. What criteria do we possess for recognizing gross anatomical changes in the pancreas?

2. What means have we of appreciating disturbances of function of the pancreas?

3. The diagnostic features of the more important changes in the pancreas.

Normally the pancreas can not be palpated except in thin sub-

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jects with separated recti, and then very indistinctly. Enlargements of the pancreas are rarely palpable. Suppurative pancreatitis with abscess formation of the omental bursa may sometimes be felt deeply situated behind the stomach and colon. The swelling is immobile, does not descend with respiration and differs from the kidney in its immobility and non-extension into the flank.

The pancreatic secretion is amylolytic, proteolytic and has the power of splitting and emulsifying fat as well as a definite influence on sugar in the metabolism. Glycosuria would arouse suspicion of pancreatic disease. Many diabetics are found post mortem to have pancreatic disease.

The presence of large quantities of fat in the stools in the absence of jaundice and diarrhea or other bowel disturbance would point to deficiency in pancreatic secretion, but too much reliance must not be placed on this symptom.

The presence in the stools of large quantities of undigested muscle fiber is suggestive of pancreatic disease.

The author then reviews the diagnostic feature of the individual pancreatic diseases.

Acute pancreatitis.—It is often associated with cholelithiasis and many of the subjects are alcoholics. Symptoms: Sudden very intense epigastric pain, usually in the median line; the epigastric region is disturbed, rigid and tender; in some cases pressure over the spleen causes pain by communication of pressure to the tail of the pancreas; vomiting of mucus and constipation are usually present; no temperature, pulse greatly accelerated; cyanosis may be a striking symptom symptom; prostation is great, and collapse and death may occur in a few days. It is easily confounded with biliary colic. In perforation of the gall-bladder and in cholecystitis, pain and tenderness are usually on the right side. The condition is differentiated from intestinal obstruction by the epigastric location, absence of stercoraceous vomiting and lack of distention of intestinal coils.

In milder cases the diagnosis is more difficult; persistence of the symptoms, with rise of temperature would suggest suppurative or necrotic change. The finding of glycosuria, fatty stools, imperfect digestion of albuminoids would help the diagnosis.

In another class of cases the onset may be more gradual, with irregular fever, chills and pain in the epigastrium. Later, with the de-

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velopment of parapancreatic abscess, a deep tumor may be palpable in the pancreatic region. A fat, splitting substance was found in the urine in the only case that was thus tested.

Pancreatic hemorrhage,—The symptoms differ from those of acute pancreatitis only in their greater acuteness and more rapid course.

Chronic pancreatitis.—Usually associated with cirrhosis of the liver. A positive diagnosis can rarely be made in this affection, but it is strongly to be suspected where diabetes and cirrhosis of the liver coexist.

Pancreatic lithiasis.—Few cases have been correctly diagnosed. Severe epigastric pain in the presence of diabetes would point strongly to this condition, especially if the stools showed evidence of failure of pancreatic digestion. Pancreatic calculi (consisting of carbonate and phosphate of lime) have been found in the stools. Attacks of pancreatic colic are similar to biliary colic though the pain is more apt to be to the left of the median line in the former.

Tumors of the pancreas—Cysts.—May be small and impalpable, or so large as to fill the abdomen; they appear as retroperitoneal tumors in the epigastric and umbilical region, especially to the left of the median line.

They are differentiated from renal tumors by their immobility and by the fact that they do not extend into the flank; from hydatid of the liver by their deep position; from retroperitoneal sarcoma in the fact that the latter are solid.

Malignant growths.—Secondary involvement of the pancreas is rarely recognizable. Differentiation of large solid tumors of the pancreas from retroperitoneal sarcoma might be made where glycosuria existed and digestive evidence of lack of pancreatic secretion. An obstructive jaundice usually exists from proximity of the pancreas to the bile ducts.

He concludes as follows. Chronic interstitial pancreatitis is to be suspected under the following conditions:

1. Instances in which glycosuria develops in an individual with chronic cholelithiasis.
2. In cases of glycosuria associated with cirrhosis of the liver.
3. In glycosuria in the course of hemochromation.
4. In glycosuria following attacks suggestive of pancreatic colic.

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Pancreatic lithiasis is recognizable only when characteristic calculi are found in the stools.

Cysts of the pancreas are recognizable by their location.

Primary cancer of the pancreas is often latent. The presence of obstructive jaundice with distended gall-bladder; cachexia, with no hepatic enlargement, is suggestive of this affection.

Fatty stools, in the abscence of diarrhea or jaundice, together with indications of interference with albuminoid digestion, are confirmatory evidence of deficient pancreatic secretion.

Diabetic Coma.

Mayer (*Medical Record*, March 8, 1902) says the premonitory symptoms vary. Among those which are always present are the excretion of a large and increasing amount of B-oxybutyric acid and diacetic acid, forming the so-called acidosis of acetone and ammonia. As a rule, such symptoms as Kussmaul's respiration. severe epigastric pain, nausea, vomiting, etc., are precursors of an attack; yet, an attack may occur without warning. There is often a history of an exciting cause—as shock, worry, exertion, dietary error. A sudden attack. with drowsiness and collapse, with no previous history, is hard to differentiate from apoplexy, uremia or cardiac paralysis. Sudden headache and dizziness are often the first symptoms, or the patient may be excited and restless. with delirium or maniacal manifestations. Sometimes the first symptoms noticed are tiredness, lassitude, pain in the limbs, yawning and somnolence. There may be aversion to food and unquenchable thirst. The voice is husky and speech mumbling. The breath has the peculiar chloroform odor of acetone, often permeating the whole room; the urine has the same odor, annd the skin is dry.

The respiration is at times irregular but usually of the air-hunger variety, described by Kussmaul—a peculiar sighing respiration, the patient breathes with exertion, although the lungs and glottis are free. Inspiration is deep and prolonged; expiration short and moaning. The respiration is more rapid than normal; slight cyanosis may occur. The temperature is often increased at first, but decreases as coma develops; the skin becomes pale and cold; the pulse is small, weak and often increases to 130 or more; the tension is low, the heart's action feeble. Albumin is usually present in small amount. A constant premonitory sign of coma is the appearance of large numbers of hyaline

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or granular casts in the urine; if the attack is relieved these casts disappear.

Convulsions rarely occur; the knee-jerk is frequently absent; the pupils react to light to the last, though they are usually widely dilated. In more than half of the author's cases ptosis existed,

There is great and increasing difficulty of arousing the patient. Diabetic coma usually ends fatally in 24 to 48 hours.

Differential Points Between Gonorrheal Arthritis and Articular Rheumatism.

Fitch (*Medical Times*, March, 1902) says rheumatism is almost always a multiple joint affection. The most frequent seat is the knee; next in order of frequency are the ankles, elbows, finger and toe joints; the hip-joint is rarely involved. In rheumatic fever the joints are not permanently affected. One joint is attacked, after a few days other joints. Gonorrheal arthritis usually affects but one joint; the joint remains involved for a long time and the symptoms subside very slowly; the temperature is very irregular.

Rheumatism untreated runs its course in from six to eight weeks; under proper treatment a somewhat shorter course. Gonorrheal rheumatism untreated becomes chronic and ankylosis frequently follows. It is a destructive inflammation. Urethritis should always be inquired into.

Endocarditis and pericarditis, which frequently accompany rheumatism, are very rare in gonorrheal arthritis. An absolute and reliable negative history of gonorrhea would exclude gonorrheal arthritis.

An individual subject to rheumatic attacks may contract gonorrhea and develop a gonorrheal arthritis; differentiation on such a case would be next to impossible.

Bechterew's Hypogastric Reflex.

This consists of a retraction of the suprainguinal region on striking the skin with the handle of a mallet. The center of this reflex is probably located immediately below that of the abdominal reflex, that is, at the level of the last dorsal vertebra. The phenomenon is probably due to a contraction of the lower fibers of the external oblique.

According to Ferrio, the existence of this reflex must be distinguished from the abdominal and cremasteric reflex, and its diagnostic importance must be considered equal to the others, and its presence

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denotes integrity of that part of the spinal cord and the first lumbar nerves. Occasionally it is absent in normal individuals.

Syncope.

Huchard reported the case of a woman with mitral disease which was well compensated, whose frequent attacks of syncope were of nervous origin. A physician also had syncopal attacks, of purely nervous origin, occurring from his fear of angina pectoris. Another case with syncope had extreme vertigo with complete loss of consciousness. Huchard diagnosed the case epilepsy and cured the condition upon giving 6 to 7 grams of potassium bromid daily. Two other cases simulated epileptic syncope, in which the diagnosis was exceedingly difficult. Syncope, while a heart symptom, is always caused by some other affection, never by heart disease.

New Test for Albumin.

Fuhs (*Medical Record*, March 8, 1902) recommends the following: Two cc. of equal parts of glycerin and carbolic acid are poured into a small test tube, and 2 cc. of the filtered urine are added. Agitate thoroughly; if a clear transparent fluid results, no albumin is present, but if the slightest turbidity is noticeable the urine is albuminous.

Hypophrenic Pain.

Hoffman (*Munch. Med. Woch.*) calls attention to pains having their origin beneath the diaphragm and terms them hypophrenic pains. He makes two classes – those produced by pressure and those arising spontaneously. There is great difficulty in diagnosis when no tenderness on pressure exists. A neurosis of the celiac axis has been described and may be the source of obscure pains. This condition is differentiated from disease of the abdominal organs by the following characters:

Spontaneous pains arising in the upper part of the abdomen and radiating downward anteriorly, but not reaching the lower limbs or genitals; moderate constipation, and polyuria.

Ulcer of the Esophagus.

Knapp (*Medical Record*, March 1, 1902) reports five cases of ulcer of the esophagus which had been diagnosed as pulmonary tuberculosis. Hemorrhage issuing from the mouth, slight cough, and pain on deglutition are the most common symptoms. Progressive emaciation

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frequently ensues. If a bronchitis is present coincidently, the diagnosis may be very difficult. The diagnosis is made clear by passing a stomach tube very carefully. A spastic constriction of the esophagus at the site of the ulcer stops the passage of the tube.

The Tongue in Acute Malarial Infection.

Lofton (*New York Medical Journal*, April 12, 1902) brings out a peculiar condition of the tongue which he has observed in connection with acute malarial poisoning and believes it to be pathognomonic of the disease. "This condition presents, upon exhibition of the tongue, one or more (generally two) dark lines running from the base of the organ to the apex, and usually separated by a clearly-defined tract of clean mucous membrane, about one-sixteenth to one-eighth of an inch wide." These lines have a pyramidal appearance, begin near the base of the tongue and in color resemble the stain of a potassium permanganate solution. The condition will be found from one day to two weeks after exposure or inoculation.

A Peculiar Symptom in Typhoid Fever.

Doane (*N. Y. Medical Journal*, April 26, 1902) believes that deafness on one side is a symptom which indicates grave danger in typhoid fever; deafness on both sides is less grave. He writes that Trousseau, of Paris, was the first to point out the gravity of this symptom. He reports a case of typhoid fever which was apparently doing well but this symptom developed; a few days later the patient died of perforative peritonitis.

The Serum Test for Blood.

It is well known how difficult it is to establish the presence of human blood from a dried specimen or stain. A perfectly reliable test seems to have been found in the specific reaction toward human blood corpuscles of the hemolysins in the blood of a treated animal. Wood (*Boston Medical and Surgical Journal*, January, 1902) recently described a serum test. A rabbit is treated by injecting into the peritoneal cavity about 10 cc. of human blood serum at intervals of two or three days until eight injections have been given. Serum from this animal when mixed with diluted blood serum, or a clear watery extract of dried blood, gives a distinct cloudiness and precipitation.

In the test for blood corpuscles an animal is treated by the injec-

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tion of the blood, the serum of which soon acquires cytolytic properties; in the serum test, the blood acquires a precipitating substance.

Akathesia.

Haskovec proposes the term akathesia for a condition analogous to astasia-abasia. The disorder is characterized by a feeling of depression and indefinite pain; inability to walk at times is followed by an irresistable desire to jump. Weakness and trembling of the limbs are common. Attacks of vertigo will cause the patient to fall without losing consciousness. Other hysterical or neurasthenic symptoms may be associated with the condition described.

THERAPEUTICS.

In Charge of W. L. JOHNSON, M.D.

Treatment of Gastro-Intestinal Hemorrhage in the Newly-Born by Suprarenal Extract.

Holt (*Archives of Pediatrics*, April, 1902) gave one grain of saccharated extract suspended in water every hour in a case of gastro-intestinal hemorrhage of the new-born with apparently curative effects.

The Treatment of Cutaneous Cancer by the X-Ray.

Pfahler (*Ther. Gazette*, March 15, 1902) gives the case history of a white woman, aged 70 years, whose epithelial cancer from February 12, 1901 to August, 1901, was exposed to x-rays, a lead mask covering all of the face but the cancer. The epithelioma was reduced from 3.5 centimeters in diameter to one centimeter and was replaced by glossy skin.

The patient was demented and had an outburst of insanity and again an ulceration interrupted the treatment.

A number of other cases were benefited and cured, and cuts of photographs show the remarkable results.

Dr. Pfahler cites other cases from literature and concludes: "Having now at hand an agent that is not painful, but soothing, and yet effectual, we have removed the most common cause for delay and can recommend its use in all such together with all inoperable

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cases. Let us then add this resource toward bringing this common, insidious, and loathsome disease under control." Wm. Allen Pusey in *Jour. Am. Med. Ass'n*, April 12, 1902, says, among other things, in conclusion of his article on Report of Cases Treated with Roentgen Rays that the advantages of this method are:

1. It is painless.

2. It destroys diseased tissue, but leaves healthy tissue in its place.

3. It leaves small scars.

4. It can be used in cases where the surrounding healthy tissue can not be sacrificed.

5. Hence it is available for cases which ordinary methods involve extensive operations and serious subsequent disfigurement, as for example, about the eye and nose.

6. It is available in cases in which ordinary methods are impossible because of the amount of destruction of tissue which complete removal would require; in other words, it is applicable to many inoperable cases.

7. It relieves pain. His cases were tuberculosis of skin, lupus, epithelioma, rodent ulcer, carcinoma of breast, neck head, etc., and while as he says, he does not report an unbroken series of successful cases, the results are such as to give encouragement.

Phototherapy.

In another place in this department mention is made of a new lamp for phototherapy. In a leading article in the *Therapeutic Gazette*, April 15, 1902, we find some interesting facts.

It has been found that the typhoid bacillus, anthrax bacillus, and bacillus pyocyaneus grow best in the dark and poorest in ultra violet light. These rays practically admit of no growth of said organisms. That sunlight has a powerful influence upon human beings is attested by the so-called "sunburn" which is in reality due the action of chemical rays on the skin and may be produced even on a cloudy day.

Finsen began his experiments chiefly on smallpox and found if the chemical rays were prevented from acting on the skin the inflammation and suppuration of the pox was diminished, the secondary fever abolished, and the scarring avoided. This was accomplished by placing a red blind over the window of the patient's room to exclude the chemi-

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cal rays. This treatment was extended to lupus and other diseases.

The arc-lamp is even more effective than sunlight, and time of treatment (exposure) much lessened. This article is well worth reading and gives credit to an editorial in the *Quarterly Medical Journal*, February, 1902. Clemensen, (*Jour. Am. Med. Ass'n*, April 12, 1902) reviews Finsen's Phototherapy.

Necessity of a Practical Knowledge of Dietetics, Hydrotherapy and Physico-Mechanical Therapeutics.

Fenton B. Turck (*Jour. Am. Med. Ass'n*) observes that until recently the profession has for the most part relied upon the administration of drugs for the alleviation and cure of disease—all other means, except surgery, being left to the abuse of charlatans and quacks. The value of general hygienic conditions and surroundings; the necessity of proper and systematic bodily exercise; the curative power obtained through placing of the patient's mind in the proper psychological attitude; the importance of the use of a diet suitable to the case and to the individual; the bearing that heat and cold may have upon the bodily functions, in general, and especially on the different parts of the human organism when intelligently applied; the efficacy of massage and electrical therapeutics—all these are now recognized as forming important elements in the alleviation and cure of many pathologic conditions.

The *Revue Internationale de Therapie Physique*, March, 1902, has some articles along this line: "The Cure of Disease by Music," "Massage in Current Practice-Principles and Indications," in which we are told the physician is the one who should do this work (massage). Acute arthritis, traumatisms, contusions and ruptures of muscle tissue, hemarthrosis, hydrarthrosis, acute synovitis—all demand early massage to the end that such exudates as are usually poured out in these conditions, be rapidly scattered and absorbed, a thing not easily accomplished when an exudate has become a plastic mass, perhaps semi-organized and resistant. Simple rest with immobilization in such cases, therefore, is not deemed sufficient. The same measure is found highly useful in recent fractures where there has been little or no primary displacement and but slight tendency to secondary displacement, as fractures of the malleoli, of the skull, of the radius (without displacement) and especially in fractures of the metatarsal and metacarpal bones—where a mass of plastic exudate would be a source of greatest inconvenience,

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and where displacement seldom obtains. Fractures capable of great displacement distinctly contraindicate massage.

Phototherapy.

In another article of this French journal we learn that Dr. Fovean de Courmelles has constructed a handy, portable electric lamp, capable of producing a chemical violet ray much purer than the arc ray used (which is largely contaminated with other and practically useless rays). He has found by using hollow, iron electrodes—whose spectrum it is well known, is a very pure ultra violet ray—through which there passes a flow of cold water, by which he overcomes the necessity of interposing a vessel of cold water between the electrode and the patient. With his contrivance he kills in four seconds the staphylococus pyogenes aureus at sixty-six centimeters. With his lamp of fifty amperes and forty volts he produces in from three to five minutes the identical reaction of the skin which requires with an ordinary apparatus of sixty amperes and fifty volts a period of five and a quarter hours.

The advantages claimed are cheapness, portability. diminutive size and that it can be attached to the ordinary incandescent light-current supply.

"Pneumatotherapy" is also treated of interestingly in this number. The disadvantages and contraindications of the open window treatment of pulmonary tuberculosis are given: (*a*) An air containing the infectious agents of paludism; (*b*) damp or foggy air; (*c*) at the hour of sunset, when occurs a sudden condensation of atmospheric vapors; (*d*) an air that is too cold; (*e*) the presence of adenoids in children that would expose them to bronchitis and to pneumonia; (*f*) the very young and the very old; (*g*) a class of persons hypersensitive to cold; (*h*) the admission of mosquitoes.

In other words, for a patient, who has passed through infancy, not exceedingly old, who is not especially averse to fresh air and cold, the windows should be constantly open day and night, except at the hour of sunset and except during extreme cold or very damp weather, provided of course, that malaria (?) and mosquitoes can be guarded against. In children who have adenoids it is advisable to remove these before undertaking the treatment.

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Methylen Blue.

This drug has been used with some success in sciatica and gonorrhea, has been recommended by Smithwick in malaria with hematuric complications, has been found by Vivie and Kohler of great value in uterine hemorrhage and to have an analgesic action in dysmenorrhea. Lewis used it with success to prevent reaccumulation of pleuritic effusions and to excite adhesions of the pleural walls, by injection into the pleural cavity. Aposti used it in hysteria. Berthier recommended enemata of methylen blue in dysentery (0.5 to 1 liter of water with 1 to 2 decigrams of methylen blue retained as long as possible, and used four times daily); and now comes Hughes and Lovelace (*Phila. Med. Jour.*, March 22, 1902) with a series of cases in which this drug has been used as a sedative (following Bodoni) and the authors conclude that the results in these few cases entitle the drug to further study, and give it a place in the ever-growing class of sedatives. The cases were nearly all of wild excitement in cases in the insane and detention wards of the Philadelphia Hospital. Abscesses followed the hypodermic injections at first but after boiling the bottle containing the solution none developed.

Arsenic.

This drug is still much used. In anemia it is of considerable value especially where there is a reduction of the red cells.

Whether its action is that principally of an intestinal antiseptic, and thus the toxemia upon which the anemia depends is counteracted, or whether it is a stimulant to the bone marrow, we do not positively know.

Some are of the opinion that arsenic inhibits the hemolytic action of the liver and in this manner lessens the destruction of red cells.

In nervous affections, arsenic is exceedingly useful.

We are told it belongs to the same chemical group as nitrogen which is found in, and "is essential to all living tissue." Other members of this group are phosphorous and antimony. These act like arsenic, and it is possible that the latter replaces "nitrogen or phosphorous in living tissues and especially in protagon, which is one of the most important constituents of nerves."

Epithelial structure is modified by its action, the circulatory and respiratory systems are slightly stimulated.

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How to Take Castor Oil.

Frank S. Hough, of Sibley, Iowa (*Iowa Medical Journal*), sends the following:

It is to be deplored that a remedy of such universal application as castor oil should have such a nauseous taste and inspire such loathing disgust in those for whom it is intended. There have been methods and methods to disguise its taste and make it seemingly less repulsive. Most people will be surprised at anyone saying castor oil has no taste, unpleasant or otherwise, but such is the fact. The disagreeableness is entirely in the odor, that reaches the olfactories from the mouth and pharynx through the posterior nares. I can prove this, and if anyone will follow directions implicitly, they can take a dose of castor oil without tasting (smelling) it. Get a firm pinch on your proboscis before you pour out your dose, pour out the dose and swallow it complacently, not with a gulp or gag. After it is swallowed rinse the mouth and throat out several times with water and then swallow some water, thoroughly removing oil from mouth and pharynx. Wipe off the lips and mustache (if there is one) and after this toilet is complete, and not till then, let up the grip on your nose. It all depends on keeping air from entering the nose until the throat, mouth and lips are cleansed of the oil. Respiration during all this time can go on through the mouth and if necessary the nose can be held tightly for five minutes. I have repeatedly administered oil to children in this way and have seen adults take it without even getting the slightest taste, the oil being entirely bland and without taste. Patients instructed generally fail in following out the details until they have been taught to hold the nose tightly before, during and after the administration. The doctor should inspire confidence in the success of the scheme, or the patient from psychological cause, will do the customary gagging and force the oil up into the nose, and then the experiment falls flat.

Some Prescriptions of Arsenic and Their Indications.

℞ Tab. trit. arsenii iodidi, ea.....$^1/_{200}$ to $^1/_{100}$ gr.

Sig.—One three times daily, after feeding.

Uses: To be crushed and given in milk in chronic non-active eczemas of infants and children. Or:

Sol. Fowleri.....gtt. ss to ij

Ess. pepsin.....ʒss to j.

M. Sig.—Such a dose, diluted, three times daily, after feeding.

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Indications: As above, or as a general tonic. In older children larger doses in cases of psoriasis. Psoriasis, however, frequently yields better to iodid potash.

℞. Strychniæ arsenatis.....gr $^1/_{60}$
Arsenii iodidi.....gr $^1/_{40}$
Ft. pil j. Sig.—One or two such pills after meals.

Indications: In chronic gout, rheumatic gout, eczema, bronchitis, arteriosclerosis, myocarditis. etc., of the aged.

℞ Liq. arsenii et hydrargyri iodidi.
Sig.— Gtt v to x, *in water*, after meals.

Indications: In tertiary syphilis, anemia, diabetes, and as above. A very valuable but nearly forgotten combination.

℞. Sol Fowleri.....♏ iij to x.

Alone or with a good organic preparation of iron, or arsenous acid with Blaud's pills, are well known combinations, useful in chlorosis and post-malarial cachexias and neuralgia. With this, extract of cascara sagrada may well be incorporated to overcome constipation. The arsenate of soda is said to be less irritating to the stomach (Brunton) and may be given in larger doses.

Liquor sodæ arsenatis—(1 in 100) is given in dose of five to ten minims, equaling $^1/_{20}$ to $^1/_{10}$ grain.

Recently the cacodylate of soda has been vaunted by the French and given in enormous doses. Already several able observers have sounded notes of warning against these large doses. The price, too, is very high. The doses of 0.20 0.40 grammes had better be avoided as one grain (0 065) in Murrell's experience (*Lancet*, December 29, 1900) caused distressing and poisonous symptoms after eleven doses had been taken. This drug contains 55 per cent of arsenous acid.

Revised Classification of the Causes of Death.—A new list of the causes of death has been recently issued by the Registrar-General. There can be no doubt that the list and classification used has been antiquated for ten years. Such titles as zymotic, miasmatic and constitutional as classes of disease are certainly not in accord with modern ideas. Then such symptoms as hemiplegia, apoplexy, convulsions and dropsy should be replaced by more accurate terms which describes the etiology or pathology. The term croup should be replaced by laryngitis to which the bacterial causative element is affixed.

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SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF CITY HOSPITAL ALUMNI.

Meeting of March 6, 1902; Dr. Given Campbell, Jr., President, in the Chair.

Dr. G. G. R. KUNZ read a paper (see page 427, this issue) and exhibited a specimen of

Ectopic Pregnancy.

DISCUSSION.

Dr. MEISENBACH considered the specimen specially interesting on account of the character of the envelope and the size of the fetus. Ordinarily, tubal pregnancy or extrauterine pregnancy does not go to this term. Six weeks or two months may be taken as the average duration of a tubal pregnancy. In this case development undoubtedly continued after rupture had taken place.

The main question of importance is to establish the diagnosis as soon as possible. We have all the evidences produced by shock in these cases—the woman suddenly taken ill with pain and all the symptoms of hemorrhage into the peritoneal cavity.

Operations for extrauterine pregnancy, when there are no complications, are among the most successful of all abdominal operations. Complications may arise, of course, seriously involving the life of the patient, but when done before these set in, it offers one of the best fields for operative interference of all abdominal work.

Dr. PHIL HOFFMAN read a paper (see page 401, this issue) on

The Effect of Foot-Wear Upon the Form and Usefulness of the Foot.

DISCUSSION.

Dr. M. B. CLOPTON thought the prevailing styles of shoes had deformed the feet to such an extent it was almost impossible to find a normal foot in the adult. Through the influence of men who have

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worked along this line we see shoes on the market that are, in a measure, correct. After the shoes have been attended to the next factor in the question will be the sock, but it will perhaps take longer to develop this. Most socks worn now are certainly too small, owing in part to the fact that shoes have been worn that are too small, and in washing the shrinkage often has a deforming influence. Even when the correct shoe is worn there is some deformity caused by the sock. The sock with a separate apartment for the great toe, he believed, would have a tendency to relieve painful feet.

He was reminded of the fact that a person with a slight injury to the ankle will seek a position more or less of pronation—or as is considered a condition of rest, but which is really a position that allows the ligament instead of the muscles to sustain the body weight; this position becomes more or less of a habit, and after walking with the feet turned out there is a tendency to flat feet.

Dr. MEISENBACH believed these days of modern civilization tends to deform the human anatomy rather than correct it, especially in the female. He had hoped the essayist would mention the correct lines upon which correct shoes should be made—the correct anatomical last. For a number of years he patronized an "anatomical" last maker, but he found it necessary to "break in" every pair and gradually developed corns, something he had never had before. So he has of late years been buying his shoes in the ordinary shoe houses and has gotten a better-fitting shoe than formerly when made to fit. The most satisfactory shoe he has seen, especially for women, was the Boston shoe. It is a very striking fact that the farther West we go the more we find those abominal creations of the French school, such as shown by Dr. Hoffman. He was interested in watching the "Chinese walk" practiced by some of our fashionable women when wearing that sort of footgear.

He did not fully agree with the essayist as to the development of some abnormalities; he believed there is an inheritited tendency to certain conditions, especially flat foot, and did not consider the shoe alone responsible. He thought if the manufacturers were given correct ideas as how to make shoes there would be a gradual revolution in favor of the proper foot-wear. The American shoe is at the present time the best shoe made and has invaded the markets of Europe. Twelve years ago the American in Paris was known by his footgear.

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The people there wore miserable shoes and the elegant foot-wear of the American was very striking.

Dr. HENRY JACOBSON believed the present generation of young school girls are walking better than they did in his youth, and are greatly benefited by athletics, etc. They wear a much wider and better made shoe; many wear the common-sense or English last shoe.

Dr. ELSWORTH SMITH felt that the paper was incomplete in not having given us a better idea of what to wear and where it could be obtained. Dr. Hoffman evidently sees very little hope for us, but a great deal for the babies if we can get the right kind of foot-wear.

Dr. N. W. SHARPE had also been interested for many years in the problem of foot wear. It is probably easier to-day to secure good foot-wear for men than for women. There is a child's shoe in the local market called "the orthopedic shoe," but the speaker had found it faulty because of the poor quality of leather, though the general form is quite fair. As a commentary upon public knowledge it may be of interest to know that he had inquired as to the reason why this shoe was not handled in St. Louis in more substantial leather, and was informed that there are not enough people in the city who purchase such shoes, consequently the dealer did not feel justified in carrying a complete stock. The dealer added that the few who would buy such a shoe were known and for this small demand a very limited stock was carried. One will also secure valuable experience in further prosecution of the search for sensible foot-wear when endeavoring to buy a right and left stocking with individual toe pockets. The clerk will inform him that this sort of stocking is not at all good and does not compare with the conventional stocking. Judging from a personal experience, Dr. Sharpe had found a shoe in Boston superior to those furnished in the West or South.

The speaker did not agree in regard to the American shoe being invariably the best shoe made. The English walking shoe, especially those for men's wear, he said, is probably a better shoe.

Had the essayist taken up in addition the theme of correct foot-wear there would not have been sufficient time to cover the subject, and the speaker, therefore, suggested that a second paper be presented in which this important subject could be dealt with adequately.

Dr. H. W. SOPER thought an abstract of Dr. Hoffman's paper should be in every schoolroom in the city.

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The PRESIDENT asked the explanation of the prevalence of flat-foot among the negro race, a race who in former times did not wear shoes and even now go barefooted more than the white people and when shoes are worn they are usually very loose.

Dr. C. H. DIXON considered the paper very instructive and the illustrations made the impressions more vivid and added materially to the value of the paper.

In regard to abdominal girths, he said that lately, in Paris, an effort was made to pass a law making it a misdemeanor for a female under 20 years of age to wear a corset.

Speaking of the inability of the Chinese women to stand erect, he said he noticed in Sayre's book, fifteen years ago, a statement that fashionable women wearing high heeled shoes, the heel extending forward to or beyond the middle of the shoe, were compelled to walk backwards when descending steps, and bowing at the same time to an imaginary individual, as they left the house.

Dr. JOHN GREEN, JR., asked how far the so-called "orthopedic" last conformed to the ideal shape.

Dr. HOFFMAN, in closing, said it is quite true that shoes to day are better than they have been, but they are by no means as good as they should be. It is also true that the great majority of men do not wear good shoes. The toe compartment in the stocking would be good, so also right and left stockings.

The negro is not naturealy flat-footed; he had seen a great many feet of negroes and found that most of them have well-shaped, strong feet. Of course, the negro is a shiftless fellow and turns his foot out. He had noticed that people in the lower stratum of society are inclined to throw their feet out. The poor and ignorant, when they try to ape the fashionable, go to extremes. He did not believe there was a hereditary tendency to flat foot and other deformities; and the statement that is almost universally made that the child is born flat-footed, is not correct. It has been demonstrated that children have as well-formed an arch as the adult, but there is a pad of fat under the arch which makes it seem flat.

It is true that the Boston shoes are better made. In our city it is hard to get a good adult shoe but we can get a good shoe for children. This brought him to the question of correct lasts: First, the heel should not be elevated—one should walk on the heels and the ball of

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the foot; there should be either no heel, or a very low one. Then the shank should be sufficiently wide to bear the weight and should not be in the center of the sole but more to the outer side and much wider than it is; again, the toe should be wide. For the normal foot the shoe should be made not only wide enough but have an inward sweep so as to allow for adduction of the great toe as the person walks. Another important point is that the average shoe has this turning out, so-called spring, which is for the purpose of keeping the leather from wrinkling. This provision for adduction of the foot need not be as great in the adult as in the child. The American shoe is better than the French or German shoe, but the English shoe is better than the American shoe. The ideal foot wear is the sandal or moccasin. The ideal last, he said, would conform absolutely to the shape of the foot.

Medical Society Meetings in June.

American Medical Association, Saratoga Springs, N. Y., June 10 to 13.

American Surgical Association, Albany, N. Y., June 3 to 5.

American Laryngological, Rhinological and Otological Society, Washington, D. C., June 2 to 4.

Louisiana State Medical Society, Shrevesport, June 3 to 5.

Association of Military Surgeons of the United States, Washington, D. C., June 5 to 7.

American Orthopedic Association, Philadelphia, June 5 to 7.

American Academy of Medicine, Saratoga Springs, N. Y., June 7.

American Climatological Association, Los Angeles, California, June 9 to 11.

American Proctological Association, Saratoga Springs, N. Y., June 10.

Colorado State Medical Society, Pueblo, June 17.

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REPORTS ON PROGRESS.

MEDICINE.

In Charge of W. M. Hoge, M.D.

Pneumonia.

Stephen Smith Burt (*American Medicine*, April 26, 1902,) says pneumonia is an acute, self limited, systemic infection, whereof the concomitants, though various, are chiefly pulmonary. It is endemic, occasionally pandemic, in many countries, and it occurs everywhere sporadically.

Regarding the lung tissue, the affection seems more of the nature of an exudation than of an inflammation. The frequency of the detection of the diplococcus, in living blood in pneumonia suggests that by improved technic it will be found, like the plasmodium of malaria, invariably.

Infection of the heart muscle with resulting degeneration has more to do with heart failure than mechanical obstruction. The exact significance of pathologic leucocytosis requires further elucidation. Pre-existing fertility, as to the condition, determines the degree of infection, rather than the number of microbes, which are in quality unchangeable; although neglect of personal hygiene and of sanitation predisposes to pneumonia; unqualified good health, on the other hand, is a protection therefrom.

Latent Pneumonia.

Harry Littlejohn, (*Edinburgh Medical Journal*, April, 1902) summarizes as follows:

1. Pneumonia may be latent during its whole course.

2. The form of the disease most likely to be latent is basal lobar pneumonia.

3. Alcoholic apical pneumonia is rarely latent during its whole course.

4. The disease may be latent even though the whole of one lung or a large portion of both lungs, is affected.

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5. In latent pneumonia, sudden death most commonly occurs during the stage of gray hepatization.

6. The condition is practically confined to persons addicted to excessive alcoholic intemperance.

7. Complete consolidation of the whole of one lung is not inconsistent with a person having continued to lead an active life up to the time of death.

8. Latent pneumonia is most frequent as a cause of sudden death during winter months.

9. It is most common after the age of forty, and in the male sex.

10. The explanation of the "latency" is to be found in the quantity of alcohol consumed after the onset of the disease; first, by masking the ordinary signs and symptoms by dulling sensibility; second, by its stimulating effect, thus enabling the person to go about until he suddenly collapses and dies.

11. In medico-legal cases, the discovery of latent pneumonia may satisfactorily explain the death of an individual, and thus allay all suspicion connected with the case.

12. On the other hand, the existence of pneumonia, even in an advanced stage, will not preclude the possibility of the individual having died from other causes, natural or violent, and of his having been, at the time of the injury, in a state of apparent health.

Treatment of Pneumonia.

Stephen Smith Burt (*Medical Record*, April 26, 1902) says pneumonia primarily owes its shortness and self-limitation to the perishability of its micro organism. The type of the disease depends upon the condition of the patient; the disease as such requires no interference. Diplococci thrive best at the normal human temperature; fever inhibits the growth of the parasite, and is, therefore, beneficial; high fever indicates extensive infection, meantime varying degrees of reactive ability. Specific medication is unnecessary if not pernicious; it is imperative to disinfect the dejecta and sputum. Aconite and its cogeners are injurious; bleeding is seldom necessary; opium, checking renal secretion, is contraindicated in large doses; in old persons it is exceedingly dangerous; oxygen is useful but not indispensable; alcohol is valuable as a food, and it conserves energy; strychnia, ammonia, alcohol and nitroglycerin in large doses should be reserved for emerg-

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encies; subcutaneous infusion of a physiological salt solution is a valuable aid to renal excretion of toxins.

Ethan Allen Gray, of Chicago, reports good results from the administration of powdered supra-renals in pneumonia. The severity of the attack was usually modified and its course shortened. In some cases three grains were given as often as every two or three hours for several days.

Diabetic Coma.

Abram Meyer, (*Medical Record*, March 8, 1902) reports a recovery from diabetic coma following the administration of several 20-grain doses of urotropin. He explains its beneficial effect on the theory, that being a chemical combination of ammonia and formaldeyd, in the presence of acid in the blood it is split into its component parts, the ammonia serving to neutralize the acid in the blood.

Angina Cruris (Intermittent Claudication).

Walton and Paul (*Boston Medical and Surgical Journal*, April 3, 1902,) report several cases, and conclude:

1. The occurence of the paroxysmal pains of angina cruris with pulseless pedal arteries is too constant to be explained by coincidence, though it is true that pulseless arteries may be found without the pains, and conversely, that such pains may be present with apparently normal arteries.

2. The painful paroxysms are probably of vascular origin and result from vascular spasm, coupled perhaps, with increased blood pressure acting on vessels already partly occluded, whether from local or general disease (aneurism, syphilis), from senile changes (atheroma) or from congenital tendency to angiofibrosis.

3. Recurring painful cramps of constant seat probably represent a modified form of angina cruris.

4. It is important to examine the dorsalis pedis and posterior tibial as well as the radial and temporal arteries in all cases in which it is desirable to estimate the bearings of the vascular condition upon disease in the central nervous system or elsewhere.

The Diagnostic Value of Tuberculin.

C. M. Wood (*Journal American Medical Association*, April 19, 1902) says tuberculin in doses of .005, carefully increased when neces-

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sary to .01, produce no bad effects in simple or complicated tuberculous or non-tuberculous cases. The characteristic tuberculin reaction is shown by a rise of at least 2°F. in temperature, reaching its height in from six to thirty-six hours after the injection, typically at the eighteenth hour, and accompanied by at least two of the following symptoms: Chilliness, headache, nausea and muscular pains.

The tuberculin test ranks in value with the Widal reaction, and its technique is simpler. The materials are more readily obtainable and permanent. The danger is no greater and the information obtained is scarcely less reliable.

Yellow Fever.

Charles Finlay (*Journal American Medical Association*, April 19, 1902) summarizes the results of his investigations as follows:

1. The epidemic foci of yellow fever in America, from the pre-Columbian times to the beginning of the seventeenth century, were comprised within a zone between the 20th and the 8th or 9th parallels of north latitude, reaching, toward the east, as far as the Leaward Islands and limited toward the west by the Atlantic coast of the American continent. During the seventeenth century, that zone extended farther north up to the 23d parallel and southward to the parallels of Bahia and Pernambuco. Finally, in 1850, it reached Rio de Janeiro.

2. The transportation of mosquitoes of the yellow fever species, in sailing vessels, appears to have been of frequent occurence, ever since the early times of the discovery of America. To it must, probably, be attributed the coincidence of the severe epidemic of the so-called "modorra pestilencial" in Santo Domingo, in 1494, with another very fatal epidemic of the same, in the Canary Islands, the same year. Apart from the conveyance of contaminated mosquitoes, healthy ones must have been frequently imported into subtropical countries, where they are found now to exist, having acclimated themselves to their new abodes. This is known to be the case in Italy, in the south of Spain and coasts of the Mediterranean, as well as in the South of the United States and in other countries. The previous existence of the yellow fever mosquito must be considered, *per se*, to constitute a dangerous complication whenever a case of yellow fever happens to be introduced in a place usually free from that infection.

3. The range of the Andes and its prolongation along the

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Isthmus of Panama and Central America, appears to have stood as a barrier, protecting to some extent the western coast of America against the migration of contaminated mosquitoes. That obstacle, however, is about to disappear when the Panama or the Nicaragua canal comes to be opened; let us hope, therefore, that, by that time, through the joint efforts of all the nations interested, all the existing foci of the disease will have been extinguished and that the adoption of measures, similar to those which have proved so successful in the hands of our sanitary department, will henceforth provide reliable means for controlling the propagation of yellow fever.

GYNECOLOGY.

Dysmenorrhea.

Menge (*Centralb. f. Gyn.*, No. 50, 1901) discusses the nature of dysmenorrhea. The source of the pain was sought originally in malformations and stenosis of the uterine canal; later a multiplicity of causes was recognized; for all sorts of pelvic lesions were found associated with dysmenorrhea. Again, the condition of the generative organs has been ignored, and the source of the affection relegated to the nervous system.

Theilhaber declared that essential dysmenorrhea always depends on a spastic contraction of the circular fibers at the inner os. While it must be admitted that dysmenorrhea is frequently associated with pelvic lesions, it is difficult to determine whether the pain depends on these lesions or some other pathologic condition. Two forms must be recognized—idiopathic and secondary dysmenorrhea. The relationship of these two forms is found in that both depend on a painful activity of the uterus during menstruation. This painful activity depends on excessive contraction of the uterus. These contractions, again, are induced by a foreign body, or a condition which acts as such, within the cavity of the uterus. At every menstruation rhythmic contractions of the uterus occur, but these are insensible to women who are healthy somatically or physically. These become sensible under the following conditions:

1. Functional disturbances of the nervous systems.
2. Pathologic changes in the genital canal.
3. Pathologic changes in the pelvic organs.

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That pain in all these conditions depends on the identical cause is evidenced by the fact that the pain resembles the pain of labor, or when a foreign body such as blood clot or tumor, is in the uterine cavity. Then the menstrual pain is always worse when the menstrual fluid is clotted. The severest pain arises when the fluid can not pass from the womb; the pain is greatest at the beginning of menstruation when the stenosis is not overcome.

Chorio-Epithelioma Malignum.

Pierce (*American Journal of Obstetrics*, March, 1902) prefers the above name to deciduoma malignum, and describes them as peculiar forms of tumors which occur only in women, which seem to bear a class relationship with pregnancy, and are characterized by a very rapid, malignant growth. There is still a diversity of opinion as to their origin and nature. The author gives a brief history of the discovery of this growth. He refers, particularly, to the classical work of Marchand, who sought to determine to what extent the two constituent parts of the chorionic villi—namely, the syncytium and Langhans cells, took part in the structure of the growths. From his study, Marchand showed that the tumors cells had nothing to do with decidua cells and nothing to do with the stroma of the villi, but consisted solely of proliferated chorionic epithelium. The conclusions drawn from his research were:

1. The tumor is made up of two kinds of tissue: (*a*) Syncytioma derived from the uterine epithelium; (*b*) Langhans cells or ectodermal cells of the villi.

2. These two forms of tissue can undergo a malignant proliferation in which the elements have the same relationship to one another as the chorionic villi.

3. The syncytium takes three forms—large cells, protoplasmic masses, and trabecular multinucleated protoplasmic structures.

4. The Langhans cells consists of polyhedral clear cells rich in glycogen.

5. Hydatid mole favors the growth of these tumors.

6. Characteristic decidual cells take no part in the growths.

7 Metastases form by way of the blood vessels.

All these findings have been confirmed, Still Voit maintains that the Langhans cells are decidual cells which have undergone a sarcomatous degeneration.

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In regard to classification, another inclines to accept Peters' view that the two layers, syncytium and Langhans cells, are histogenetically identical with each other and arise from the the ectoblast. It belongs to a separate class; it is a foreign tissue growing into maternal tissue and forming metastasis therein; hence it is without analogy in pathology.

The real cause of the disease is obscure.

Prophylaxis in Gynecology.

Snow (*British Gynecological Journal*, February, 1902) refers to three crimes which nature punishes, often signally. The first and worst is that rigid circular splint termed the corset. A great number of ailments ranging from neurasthenia to gall-stones, from a red nose to a protuberant abdomen are attributed to this cause. Uterine myomata, so unfortunately prevalent among civilized women, are often due to this source alone. Cancer occurs most often in those who wear corsets. Flexions ahd uterine displacements may readily referred to the same cause.

The next crime is habitual constipation. The third crime which he mentions is too frequent child-bearing. [At this time when most of the civilized nations are decreasing in numbers, it is rather strange to hear a gynecologist declare that too frequent child-bearing is a cause of disease].

Dermoid Cyst Removed in the Fourth Month of Pregnancy.

Platan (*Münch Med. Wach.*. 1901) reported a case of dermoid cyst occurring in a woman three and one-half months pregnant. She was attacked suddenly with abdominal pain, fever, rapid pulse and other symptoms simulating penitonitis. A tumor was found lying underneath the left costal cartilages. The diagnosis was uncertain, although the evidence pointed to some adnexal tumor. A dermoid cyst of the right ovary, the pedicle of which was very much twisted, was removed. The patient recovered.

Pessaries.

Kaan (*American Journal of Gynecology and Pediatrics*, December, 1901) believes in the benefit of pessaries in certain cases, particularly when the displacement is capable of replacement or can be made so by treatment, and the pessary keeps the uterus in position. The

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slightest pain is an indication for the removal of the pessary. Ordinarily too large a pessary is chosen. Many patients can do without the pessary after wearing them for a few months. He urges that the pessary be given a trial before resorting to operative procedures.

Laceration of the Cervix.

Beyea (*Philadelphia Medical Journal*) considers disease in the tubes and ovaries a contraindication for operating on a lacerated cervix. A pyosalpinx or other infection might initiate an acute pelvic inflammation if the uterus is wounded. The other lesions which are associated with a lacerated cervix must be treated. The unhealthy cervix requires local treatment, it is also well to do a curettage before a trachelorrhaphy.

Parametric Cicatrices.

Ott (*Semaine Med.*, Dec. 18, 1901) uses the same principle which has been adopted in treating stenosis of the alimentary canal, in dealing with parametric cicatrization. The method is to insert the sutures in the same direction as the line of incision. He has found this method very valuable in relieving symptoms of compression, due to cicatrices following inflammations.

PEDIATRICS.

In Charge of M. J. LIPPE, M.D.

The Heart of the Child.

Lees (*Pacific Medical Journal*, March, 1902) urges the necessity of a more frequent and searching examination of the heart of the child. In some respects its examination is easier than in the adult, there being no excess of adipose tissue in the child, no large pendulous breasts, rarely any emphysema. A kindly manner, gentle ways and warm hands will be necessary for a complete examination.

First make an inspection of the chest, then with a warm hand palpate; then percuss, using the lightest percussion with the fingers only. Palpation informs us as to the cardiac impulse, its strength and whether it is localized or diffused; this tells us the strength of the left ventricle.

Then shift the hand gently to the epigastrium and notice whether any impulse of the right ventricle is to be felt there; if so, there is either

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some congenital malformation or there is some disease of the lungs or heart.

Slide the hand further to the hepatic region and see whether it meets the resistance of an enlarged liver, and try very gently to feel its edge. A single tap below the costal margin will confirm or correct this observation. By percussion we are unable to ascertain anything definite about the size of the left auricle or right ventricle, but the size of the right auricle and left ventricle can be determined with consid erable accuracy.

Use the terminal phalanx of a finger of the left hand as a plexi-meter; press it firmly and gently on the spot to be percussed and let no other part of your hand touch the chest wall; so you will avoid the conduction of resonance from elsewhere, which is a fruitful source of fallacy.

Percussion will reveal the size of the right auricle, even in the normal heart there is dulness in the fourth right interspace; the third space ought to be resonant quite up to the sternum, and in the fifth space the hepatic dulness alters the note, but in the fourth the dulness of the right auricle is present for about one finger dreadth in an adult and rather less in the child.

When the auricle is dilated it may extend to two finger breadths in the fourth space and from a half to one finger-breadth in the third When the dilatation is very great it may amount to three finger-breadths in the fourth space, one and a half in the third and may even be detected in the second.

The accurate determination of the size of the right auricle is of great importance and often indicates the necessity of leeches to relieve the distention. Reserve auscultation to the last, especially stethoscopic examination.

Look out for congenital murmurs in the child. The most frequent one is a loud systolic murmur, which is loudest at or just below the junction of the left fourth costal cartilage with the sternum, it is probably due to an incomplete septum The next most common, perhaps, is a systolic murmur overy the pulmonary artery, loudest at the second left cartilage and cunducted toward the clavicle, often audible in one or both suprascapula fossæ This indicates a congenital obstruction of the pulmonary artery.

It is at times impossible to determine the condition of a malformed

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heart by physical examination, and in some cases there may be no murmur at all. A patent foramen ovale unassociated with any other malformation, is probably of little importance, and is a doubtful cause of a murmur.

Congenital murmurs are systolic in time, a presystolic or a diastolic congenital murmur is very rare. Congenital malformations affect mainly the right side of the heart. The most important affection of the right heart, clinically, is secondary to acute or extensive chronic disease of the lungs, or disease of the left heart.

In pneumonia the right heart is distended, the auricle more so than the ventricle. If, at the same time, the musculature of the heart is poisoned by the pneumotoxins it is apparent that pneumonia is a process dangerous to life. The dyspnea and distress due to a distended heart may be relieved and the patient tided over a difficult period by applying a few leeches over the liver; even the disturbed sleep is relieved by such a procedure. Within a short time after such bleeding percussion will show that the dulness in the fourth right interspace is diminished; it may be necessary to repeat the bleeding. Pallor of the face and a feeble pulse are not contraindications, for after the right side bas been relieved the pulse will get stronger and the color of the cheeks improve. What has been said of dilatation of the right heart in pneumonia, applies to distension then to other pulmonary affections.

In repeated attacks of rheumatic fever affecting the left heart, dilatation of the right heart may occur, in such cases the only physical sign may be an accentuated second sound; in bad cases dyspnea, engorgement of the liver, etc., will be markedly relieved by venesection or leeching.

The left border of cardiac dulness in a normal child is about one inch internal to the left nipple line.

During and after an attack of diphtheria the cardiac dulness may extend to the left of the nipple line; if it extends two finger-breadths to the left of this line there is great danger of life; if it is only one finger-breadth outside the nipple line, it must be remembered that a rapid increase in the dilatation may occur, even six or seven weeks after the diphtherial attack, and may cause sudden and unexpected death, the heart muscle being degenerated by the toxin of diphtheria. Influenza may also cause a rapid dilatation.

In typhoid fever there is a gradual enlargement of the left ventricle, which disappears during convalescence.

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In acute and subacute rheumatism an enlargement of the left ventricle is invariable; it is the first indication of cardiac involvement and may be detected when there is no evidence of endocarditis or pericarditis. After repeated attacks of rheumatism the heart may reach an almost incredible size, extending four finger-breadths to the left of the nipple line and three finger-breadths in the fourth right intespace. In children the cardiac manifestations of rheumatic fever may be more pronounced than the arthritic. In the larger rheumatic heart there is usually present a systolic apex murmur, and frequently a presystolic or mid-diastolic murmur also. Occasionally a diastolic murmur at the base gives proof of aortic insufficiency. In chorea enlargement of the left ventricle is frequent.

The tendency to cardiac disease in chorea and rheumatism is not merely the result of a toxemia but is doubtless due to actual inflammation of the muscular and fibrous structures of the heart, a diplococcal micro-organism being causative. Such organisms have been cultivated from the cardiac valves and muscles in fatal cases.

The pericardial fluid from a rheumatic child when injected intravenously into rabbits can cause in these animals all the characteristic effects of rheumatism in the child, as has been demonstrated by the experiments of Drs. Pointon and Paine. Sodium salicylate seems to be a specific against this micro-organism. Sodium bicarbonate is also of value in rheumatism. The application of ice is repressive to cardiac inflammation. Digitalis is of no value until after the inflammation has subsided.

In ventricular dilatation due to toxemia the hypodermic use of strychnin is of positive value. Belladonna is a life-saver in the dilatation due to diphtherial toxemia.

Notes on Some Diseases of the Kidney and Bladder in Infancy.

Morse (*American Medicine*, April, 1902) insists that disease of the kidney and bladder are more common in infancy than the text-books would have us believe. The apparent rarity is due to the infrequent examination of the urine at this period of life. At birth, when drawn by catheter, the urine is acid and of an average specific gravity of 1012. Small amounts of albumin are almost always present. The sediment always contains normal epithelial cells, various forms of uric acid crystals and now and then hyalin casts.

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In infancy the odor of the urine is slight; it is usually clear but may be turbid from the presence of mucus. The reaction is feebly acid. The specific gravity varies from 1003 to 1008 in the first six months and from 1006 to 1012 up to two years. One-third to one-half gram of urea per kilo of the body weight is said to be passed in twenty-four hours. From 40 to 50 per cent of the nitrogen ingested appears in the urine. Uric acid infarctions are seldom present before the second day. Hematuria is found under the same conditions as in the adult; it may occur as a symptom of hemorrhagic disease of the new-born and is not infrequently the earliest symptom of infantile scurvy. Acute nephritis would be found more frequently if the urine was examined as a routine matter. Acute pyelitis and pyelonephritis due usually to infection by bacillus coli communis, occurs not infrequently. The symptoms of cystitis, fever, restlessness, colicky pains, etc., are easily misinterpreted. Urinalysis will generally clear up the difficulty.

A Specimen of Diphtheritic Membrane.

Samuel W. Kelly (*Cleveland Medical Journal*, January, 1902) reports a case of laryngeal diphtheria which, during the life af the patient (a young lady, aged 20 years), after intubation, expelled a cast of the larynx, trachea, bronchi and even some of the bronchioles. The whole specimen was just twelve inches long. A bacteriological examination showed the Klebs Loeffler bacillus in pure culture.

SURGERY.

In Charge of

A. V. L. BROKAW, M.D., and E. C. GRIM, M.D.

Indications for the Mastoid Operation.

Hammond (*American Medicine*, April 12, 1902) finds in the literature, as well as in his own experience, that a large majority of children ill with various affections have middle ear trouble. The pus from this has ready access to the mastoid; for when the patient is in a reclining position, it can easily gravitate into the cells, through the antrum, unless this opening be blocked by the edema of the mucous membrane.

Mastoid abscesses invariably come from an infected middle ear,

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even though that ear has given no external evidence of suppuration. It is true that in the past there have been a few cases of primary mastoiditis reported, but, in the light of later knowledge, most authorities are agreed as to the truth of the foregoing statement.

The ordinary symptoms of mastoid complication in a typical case differ but little from those in the formation of any abscess. We naturally expect pain, with tenderness on pressure, and a certain amount of febrile disturbance. There are some subjects, particularly tuberculous patients, who suffer but little actual discomfort during the progress of the disease; but ordinarily the pain is so severe that sleep is out the question. Tenderness. on pressure over the bone, is an important symptom when present, as it not only testifies to the presence of the inflammation, but gives us some idea as to its extent The area of tenderness is usually sharply marked over the antrum, in the beginning, gradually spreading toward the tip. The general soreness of the insertion of the sternomastoid muscles must not be confused with this latter symptom.

There is generally no swelling over the mastoid process until a later stage in the disease, and this is usually preceded by appreciable swelling of the canal wall, which becomes evident on examining with the speculum. This swelling in the canal appears on the upper or posterior wall, and sometimes on both, and may be of such extent as practically to occlude the canal, rendering the diagnosis between furuncle and mastoiditis a difficult matter. Persistent tenderness of the mastoid, with the appearance of this swelling of the canal wall is always the signal for prompt intervention, as it signifies that the inflammatory process is gaining headway, and further delay will be dangerous.

The first thing to ascertain, when examining a suspected case of mastoid trouble, is as to the presence or absence of pus in the middle ear. A free incision should be made in the drum in all cases when the drainage is insufficient; and, in case there is any tenderness of the mastoid, cold applications may be made with advantage. Many cases of threatened mastoiditis are aborted by using this treatment promptly. The ear should be frequently cleansed to allow the escape of all pus, and the use of a hot douche every two hours will do this and also aid in allaying the inflammation. A diminution or absolute cessation of the discharge from the ear does not necessarily mean

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that the patient is becoming better. There is a natural tendency on the part of the drum to close over, and this must be carefully prevented; for, if the drainage is not perfect, the pus is more apt to escape into the mastoid. If, in spite of all our endeavors, the tenderness of the mastoid increases, or swelling of the canal wall appears, it is better to operate at once.

If a tenderness of the mastoid process persists for a period longer than two weeks, with a continuous discharge from the middle ear, it is usually the safest plan to operate; for, as has recently been pointed out by Dench, the operation, carried out by competetent hands, is never dangerous, while the disease frequently is.

The endeavor in presenting this paper has been to place before you the common means of diagnosing mastoiditis. The main features that we have discussed might be well summarized as follows:

1. Mastoiditis is always subsequent to purulent inflammation of the middle ear.

2. Tenderness of the bone is an important symptom when present, but the mastoid may be full of pus, with absolutely no tenderness.

3. Bulging of the canal wall is a most important symptom.

4. The absence of temperature is no guide whatever.

5. Improvement of the hearing is usually indicative of subsiding inflammation in the middle ear.

6. The operation is safe; delay may be dangerous.

Closure of Abdominal Incisions, With Remarks Upon the Cause and Prevention of Ventral Hernia.

A. S. Stone, of Washington (*New York Medical Journal*, February 8, 1902,) presents an able paper on this subject: If the statistics of ventral hernia resulting from abdominal operations could be accurately tabulated, he thinks we would be astonished at the aggregate number. Four primary reasons are given for the conditions: Wound infection; improper coaptation; enteroptosis with pendulous abdomen, and accident, such as vomiting, etc.

Dr. Stone discusses only two methods of closure, the through-and-through suture and the buried suture of absorbable material, giving his preference to the former, or a combination of the two.

The author usually clips off the loose peritoneum that is so often seen in the median incisions; then puts in his through-and-through

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suture of silkworm gut and sews the fascia over the rectus with an absorbable suture, and then ties the through-and through suture.

The silkworm gut suture is so inserted that it includes much more tissue between the cutaneous and peritoneal surfaces than it does at these surfaces, thus bringing equal pressure throughout the cut surface of the wound.

The layer suture has given good results, but is more likely to cause unnecessary pressure on the entire wound surface and prevent a proper blood supply.

French Medical Literature.

Translated by A. S. BLEYER, M.D.

Valvular Lesions of the Heart no Contraindication to Chloroform.

Guyon (*La Semaine Medical*, February 26, 1902) maintains that no cardiopathy, save where fatty changes in the heart muscle exists—contraindicates the administration of chloroform. This view has been held by Huchard and Bucguoy for some time. Brouardel in a series of twenty-five autopsies in individuals whose death was directly imputable to chloroform, reports that not one case in the entire series showed a valvular lesion. In three there was found a fatty infiltration, in one fatty degeneration.

A number of prominent men are of the opinion of Guyon in this matter, and look very indifferently upon the existence of a heart murmur, as a reason arguing against an operative procedure demanding chloroformization.

In the same journal of March 5, 1902, in the report of a subsequent discussion of this subject in the Acadeny of Medicine, opinions are rife on both aspects.

Vallin remarks that it is very frequently in the beginning of anesthesia, in the stage of excitation, that death occurs.

Duret has accumulated statistics bearing on 135 cases of sudden deaths from chloroform. Of these, 25 were found to possess fatty hearts; in 4, no other lesion of the circulatory system was found besides pericardial adhesions; in only 6 in 135 cases, were valvular lesions found present.

When we consider the enormous number of operations performed

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on cardiopaths, and we notice such statistics as these, heart trouble of itself does not appear to be a prolific cause of death from chloroform.

What the action of chloroform on the heart is—is very poorly understood. If it is such a depressant as we have conceded it to be, we should naturally look for far more deleterious effects from its action on a heart incapacitated because of some valvular lesion.

It is actually a question, whether chloroform, given in urgency, where many signs of failing compensation existed, would prove fatal to the patient. It is certain that such patients have sustained operation.

In Brouardel's twenty-five cases, fourteen deaths occurred very early in the beginning of anesthesia, long before muscular tonicity was abolished. The heart-muscle at this moment was perhaps contracted as well as the muscles throughout the body, and in these fourteen deaths we were dealing with healthy hearts.

Information is sadly needed on the explanation of these points.

Eosinophilia in Hydatid Cysts.

Juffier and Milian (*Ibid.*, March 5, 1902) find that a marked eosinophilia is practically invariable in hydatid cyst occupying any region of the body.

Diazo-Reaction.

Deléarde and Hautefenille (*Ibid.*, March 26, 1902) find that salol, phenol, benzo-naphtol and betol are capable of markedly diminishing or abolishing the diazo-reaction in typhoid fever.

Detection of Human Blood.

Limossier and Lemoine (*Ibid.*, March 26, 1902) report experiments bearing on the detection of human blood-spots for medical and medico-legal subjects.

They have found that the precipitins of human blood are not specific, but that a reaction is noted as well with the blood serum of various animals—the bull, horse, dog, sheep, pig, guinea-pig and chicken.

They find, however, that with human blood serum the reaction is far more sensitive. A concentration of 1 in 40 or 50 is necessary to produce a reaction with the serum of these animals mentioned, while with human serum, a concentration of 1 in 1000 is sufficient for marked precipitation.

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This is perhaps, the most promising methods for detection of human blood. We have reasonable expectation, that with attenuated sera—the specificity of each blood serum will be demonstrated.

The accomplishment of this will be far-reaching, indeed.

Urinary Phosphates in Pneumonia, Typhoid and Tuberculosis.

Gouraud (*Ibid.*, March 26, 1902) finds that the earthy phosphates in the urine diminish markedly during the febrile stage of pneumonia and typhoid fever Not so in the the febrile stadium of tuberculosis.

Another point worthy of note is that, after the period of diminution of phosphates in typhoid and pneumonia, there is a sudden phosphatic crisis, an increase of the coefficient to 50 and 70 per cent, coincident with and immediately following the defervescence of the fever.

Renal Pseudocholemia.

It has been found by Gilbert and Hirscher (*Ibid.*, March 26, 1902) that in interstitial nephitis the blood serum is almost invariably of a deeper yellow tinge than normally – and often gives the reaction of Gmelin for bile pigment (27 cases in 32).

It will be remembered that a yellowish tinge of the skin and occular conjunctiva is not uncommon in cases of interstitial nephritis.

The question aptly arises, is there an icterus of renal origin? or, as it is suggested, is there merely a retention of the normal serochrome because of the impermeable kidneys?

This latter conjecture seems to these gentlemen the more probable, altough they offer as a correct appellation in a certain category of cases—the term " Renal pseudocholemia " or " Renal hyperchromic pseudo-icterus."

Electricity as an Anesthetic.

Electricity as an analgesic, is not at all a new thing. But for an operative local anesthetic its application is of quite recent date.

Its promise is good. It is not toxic, is quite easily and aseptically administered, and requires but a little forbearance on the part of the patient, and average dexterity on the part of the surgeon.

Regnier and Didsbury (*Le Progres Medical*, March 29, 1902) have constructed an electrical apparatus capable of producing local anesthesia in from three to eight minutes, which lasts from a few minutes to a quarter of an hour.

The current strength used is from 150 to 300 milliamperes, and

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the electrodes are so arranged that not the slightest burning of the superficial tissue is caused.

These experimenters have demonstrated their work before such men as d'Arsonval, Bergonié, and Conpard, and have met with a cordial endorsement of their success.

Their particular field, so far, has been the application of the anesthetic to dental work. Curettage of the pulp chamber, and extractions are performed with perfect analgesia.

Laparotomy for Prostatectomy.

Albarran (*Le Progres Medical*, March 15, 1902) has performed thirty-one laparotomies for prostatectomy. The cases were all in men of over sixty-two years of age—suffering from hypertrophy with retention, cystitis, and, in some cases, pyelitis with pus.

In every case there was complete recovery. The most marked relief occurring in the inveterate cases.

This a high recommendation for this operation, since with the subpubic methods, and the operation of Bottini, we have a mortality of 15 per cent, and frequently grave complications, that failed entirely to occur in the series of operations here reported.

The gland was removed by morcellament.

Limited Influence of the Kidneys on the Molecular Concentration of the Blood.

Achard and Loeper (*Ibid.*, March 29, 1902) assert in a note that the molecular concentration of the blood—which promptly regulates itself after the injection of an anisotonic solution—will also regulate itself after abolishing the blood connections to the kidneys.

This demonstrates, that, although variation in elimination of the kidney secretion does materially influence the molecular concentration of the blood, the kidney is not the regulating center for such molecular concentration, since a disturbed osmotic tension will be overcome without the action of the kidneys.

Color-Blindness.—Mr. Edridge-Green believes what man has gained in color perception, he has lost in acuteness of vision. Savages have a far more acute sight than is normal in civilized communities; but their color perception is weak. Many color-blind persons have a very acute sense of sight.

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BOOK REVIEWS.

A Text-Book of Physiological Chemistry, for Students of Medicine and Pyhsicians. By Charles E. Simon, M.D., of Baltimore, Md. Lea Brothers & Co., Philadelphia and New York. 1901.

The great importance of physiological chemistry to the practitioner is becoming more accentuated annually, and no scientific physician can practice rationally without a knowledge of the basic principles. All life processes are intimately associated with chemical activity. Its influence commences at the beginning of digestion and follows the food until tissue cells are formed.

Moreover, there can be little doubt that most pathologic processes depend entirely on a peculiar chemical affinity that certain extraneous substances possess for some anatomical structures. It follows that rational therapy presupposes, a thorough knowledge of this subject.

The principal difficulty in mastering the subject, is its complexity, which grows more and more intricate as additions are made by the researches of the chemist. A comprehensive review of our present knowledge, which shall embrace all the essentials, and shall properly classify the different organic substances so that they can be easily grasped and readily adapted to practical work, is extremely valuable.

Such is the work with the above title. It is designed especially for students and practitioners. It is fairly complete, and descriptions of chemical compounds are found that will satisfy the most progresive physician. This book will, no doubt, have a large sale, and should be in the library of every practicing physician.

The Diagnosis of Surgical Diseases. By E Albert, M.D., late director and professor of the first surgical clinic at the University of Vienna. Authorized translation from the eighth enlarged and revised edition. By Robert T. Frank, A.M., M.D. 53 illustrations. D. Appleton & Co., New York. 1901.

The works on surgical diagnosis are few when compared to the number of works on the diagnosis of medical diseases. Such a work

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as this fills a large gap and will at once attract the attention of the general practitioner as well as the surgeon. Surgical diagnosis as a science is gradually approaching a high degree of perfection, and the principles should be collectively recorded. It can not be said, however, that the plan of this book is as satisfactory as is found in a few books on medical diagnosis. As there has been less effort in this field, there has been less progress.

As in other works on diagnosis, symptoms are considered from the standpoint of the practitioner at the bed side. The first chapter opens with a discussion of the causes leading to abnormal positions of the head. The plan followed exclusively is the study of diseases as applied to regions. General symptoms properly belong to the branch of internal medicine, but must also be considered in many surgical diseases; they are only incidently referred to in this volume. Dislocations and fractures receive most careful consideration. Owing to the extreme importance and the difficulty of diagnosis, much too little space is given to abdominal inflammations and abscesses. Appendicitis is dismissed with a short paragraph. Tumors and diseases of the internal generative organs of women are not included in this surgical diagnosis.

Microscopical, pathological, bacteriological, and chemical diagnosis, which are such valuable aids to diagnosis, are occasionally mentioned but no details are given. Neither are instruments used in diagnosis, such as the cystoscope, urethroscope, gastrodiaphane, etc., placed as adjuncts to scientific exploration.

In short, this work contains many practical points in connection with surgical diseases, it deserves the careful study of every practitioner; but it can not be considered an up-to-date and complete work on the subject, and does not compare in excellence with some works on medical diagnosis; *e. g.*, Butler's.

Diseases of Women. By F. H. Davenport, A.B., M.D., assistant-professor in gynecology, Howard Medical School. 154 illustrations. Fourth edition. Lea Brothers & Co., Philadelphia and New York. 1902.

This revised and enlarged work merits the attention of the general practitioner who treats gynecology and to such will be of considerable value. It is practical and so far as it goes—as far and further than those that true specialists care to go—is replete with all that is

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good up to date. Dr. Davenport has not taken for granted that his every reader is thoroughly familiar with the little things, such as positions, dressings, tampons, definite solutions, etc., but has described in a minute way just what is to be done.

To the student, beginner, or the physician who does not daily have gynecological work, it is a reference book of no mean quality—anatomy, diagnosis of flexions, ovarian tumors, malignat disease—in short, this last edition covers the field quite thoroughly save for operative procedures of magnitude. Even some of these are outlined.

Dr. Davenport still believes in the pessary when properly fitted and applied. In this he has not changed his attitude of 1892. The chapter which includes treatments by pessaries is very thorough.

Altogether this is a book to be recommended and especially to those who have had no particular training in this line.

The Practical Medicine Series of Year Books, Comprising ten volumes on the year's progress in medicine and surgery, issued monthly. Under the general editorial charge of Gustavus P. Head, M.D., professor of laryngology and rhinology, Chicago Post-Graduate Medical School. The Year Book Publishers, 40 Dearborn street, Chicago. Price, for the Series, $7.50.

Volume IV.—Gynecology. Edited by E. C. Dudley, A.M., M.D, professor of gynecology, Northwestern University Medical School; gynecologist to St. Luke's and Wesley Hospitals. Chicago. With the collaboration of William Healy, A.B , M.D. March, 1902. Price, $1 25.

This series is published primarily for the general practitioner and the arrangement in several volumes is really an improvement over the ponderous volumes, which have been published in the past. The fourth volume contains a resume of recent progress in diseases of women. It contains many helpful illustrations. Chapter V, on pelvic infections, is more complete and practical than is usually found in text books. The recent literature on tumors and displacements is thoroughly reviewed. The general practitioner will find many helpful hints in diseases of women in this volume.

Volume V.—Obstetrics. Edited by Reuben Peterson, A.B., M.D., professor obstetrics end gynecology in the University of Michigan and Henry F. Lewis, A.B., M.D., instructor in obstetrics and gynecology in Rush Medical College. April, 1902. Price, $1.25.

This, in common with the other volumes of this series, aims only

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to offer the digested views of the best writers who have considered the different branches of obstetrics during the past twelve months. It fulfills this aim admirably. The works is divided into four parts: Pregnancy, Labor, the Puerperium and Obstetric Surgery. Each one of these parts is sub-divided into several sections. While the pathology of the various disorders of pregnancy is briefly discussed, special attention is given to treatment. The authors have made a very good selection of articles from recent literature, the principal contents of which are clearly expressed. The general practitioner will find this a useful adjunct to his text book of obstetrics.

Studies in the Psychology of Sex. Sexual Inversion. By Havelock Ellis, L.A.S. (England); fellow of the Medico legal Society of New York and the Anthropological Society of Berlin; honorary fellow of the Chicago Academy of Medicine, etc.; general editor of the Contemporary Science series since 1899. The "studies in the psychology of sex" will probably be completed in five volumes. "Sexual inversion" is the second volume in the series. Pages xi-272. F. A. Davis & Co., 1914, Cherry Street, Philadelphia. Extra Cloth, $2. net, delivered. Sold only to physicians, lawyers, advanced teachers and scientists.

This volume is one of five which Havelock Ellis has under preparation and deals with the division referred to in the title of this very difficult subject. Much labor has been expended in its preparation, information in this direction is not easy to obtain and must be gathered from many sources through considerable periods of time Comments on various cases cited lead to a better understanding of this phase of sexual psychology and we believe lead to an attitude of scientific observation on the part of the doctor, of a class he is, as a rule, quick to dismiss with a feeling akin to disgust. Once scientific interest is aroused more care will be taken to study the subjects of this departure from the normal and some progress made toward correction, prophylactic and curative. We commend this volume to any doctor in need of information by reason of having one or more inverts drift into the stream of his practice.

Genito-Urinary Diseases and Syphilis. For students and practitioner's. By Henry H. Morton, M.D., clinical professor of genito-urinary disease in the Long Island College Hospital; genito-urinary surgeon to the Long Island College and Kings County

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Hospitals and the Polhemus Memorial Clinic, etc. Illustrated with half-tones and full page color plates. Pages xii-372. F. A. Davis Company, 1914 Cherry Street, Philadelphia. Price, extra cloth, $3.00, net, delivered.

The progress in genito-urinary surgery in the past decade has been very pronounced; it is no wonder, then, that new works on this subject appear almost annualy. And each year offers some additional development in the knowledge or the practice of this department of medicine. The greatest progress, undoubtedly, has been in the methods of diagnosis. This, of course, could scarcely overstep the limits of our pathological knowledge, but by the use of the cystoscope and uretheoscope, even pathology has been advance.

This volume attempts to present in a concise form the present state of our knowledge of genito-urinary diseases and syphilis. Probably, some of the text is too brief, as it detracts from clearness; but as a whole the book will give general satisfaction, particularly as regards diagnosis and treatment.

Childbed Nursing and Infant Feeding. By Charles Jewett, A.M., M.D., Sc.D., professor of obstetrics and diseases of women in the Long Island College Hospital. E. B. Treat & Co, New York.

This small manual written originally for the nurses of "Long Island Hospital Training School," is of value, not only to those engaged in nursing, but is also good reading matter for mothers, or those about to become such. The only criticism we would make, is, that the discussion of percentage in infant feeding is a little too deep for the ordinary woman.

Transactions of the American Orthopedic Association, Vol. XIV, printed for the Association by W. J. Dornan, Philadelphia.

No branch of medicine is as distinctively American as that of modern orthopedic surgery to which, in the last twenty years, America has contributed more than any other single nation.

It is gratifying that this pre-eminence is recognized by European orthopedists, and, especially, by the English.

Much of the good work that has emanated from America originally appeared in the Transactions of the American Orthopedic Association, now numbering fourteen volumes. So prominent have these become as standard authority, that every important treatise and book

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on orthopedic surgery that has appeared within recent years liberally quotes their pages.

The eminently successful work of the Association can be attributed largely to the care and stringency exercised in the admission of members, the number of which is limited by constitution to sixty. The effect of this limitation is to fill the Association's ranks with prominent and enthusiastic workers, who naturally reserve their best efforts for its annual meetings.

While most of the original work relates to mechanical and operative therapeutics, it is of interest to note that the last few columes contain quite a number of ingenious anatomical studies, especially of the foot and spine, and that pathologic research is receiving some attention.

Volume XIV, contains forty-seven papers, the majority of which are based upon original observation and research. Pathological Lesions in Rheumatoid Arthritis, by Painter; Costume Deformities, by Bradford; The Mechanics of Lateral Curvature, by Lovett; Multiple Pathologic Dislocations, by Steele; The Typhoid Spine, by Taylor; and, Surgical Treatment of Congenital Club-had, by Redard are a few of the titles, which illustrate the character and variety of work. Lack of space forbids abstracts or mention of other papers of equal value. The volume is handsomely illustrated by 127 half-tone engravings.

"The Cow Pea" is the title of the latest publication issued by the Experiment Farm of the North Carolina State Horticultural Society at Southern Pines, North Carolina. This book neatly bound and illustrated in plain and concise manner discusses the value and uses of of this important crop, the Cow Pea. Every reader can get a copy free by writing to the Superintendent of Experiment Farm, Southern Pines, North Carolina.

The Sand-Bath.—The application of heat to joints is made in various ways. Hot, compresses, the water bag, rubber coils, and the hot air. Now the sand-bath is advocated as a most efficacious method for the application of heat to diseased hands and feet.

Hoke, at the suggestion of Van Jaksch, has constructed an ap paratus for the purpose of giving the sand bath.

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NOTES AND ITEMS.

Reading in Bed.—Dr. Carl Seiler argues that the recumbent posture allows more rest of all the bodily functions, and relieves the congestion of the eyes; it is therefore, a very good position for reading.

Test for Dog Sausages.—It has been suggested to use the blood serum for examining meat in sausages. It is possible by this test to establish the absence or presence of meat from horses, dogs, etc.

The Magnet as a Remedial Agent.—M. Fere (*Prog. Med.*) finds that the magnet has a distinct effect on fatigue. It is known to have a marked action on certain hysterical persons, and fatigued persons showed some of the reactions of hysterical individuals He experimented on himself and found that the magnet removed the sense of fatigue and strength was revived.

A Case of Tuberculosis of the Skin Following Infection by the Bovine Tubercle Bacillus.—Ravenel (*University of Penn. Med. Bull.*) cites a case of tuberculosis following accidental inoculation. A physician, while performing autopsies on tuberculous cows, slightly wounded his hand. A few weeks later the site of the wound, which healed promptly, became red and swollen; two weeks later a nodule was present. This nodule proved to be a tubercle as demonstrated by microscopical study and inoculation.

The International Association of Railway Surgeons held its annual meeting in St. Louis during the first week of May. Indianapolis was selected as the next place of meeting, and the following officers were elected: President, A. W. Candless, St. Louis; Vice-Presidents, A. L. Wright, Iowa, John B. Brule, St Louis, J. C. Wysor, Virginia, E. E. Kitchner, Canada, W. M. Jamieson, Texas, and R. Ortego, Mexico; Secretary, L J. Mitchel, Chicago; Treasurer, J. A. Duncan, Toronto.

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CLINICAL NOTES.

Pernicious Anemia.

By Edwin Leonard, Jr., M.D.,

BOSTON, MASS.,

MEMBER MASSACHUSETTS MEDICAL SOCIETY; AMERICAN MEDICAL ASSOCIATION, ETC.

It is a singular fact that the enormous amount of research, both clinical and experimental, that has been performed in cases of pernicious anemia has left the etiology of this disease still a matter of theory. Whether the theory of defective hemogenesis or that of hemolysis is correct is not fully known, yet on one point all seem to agree that the changes in the blood are due to some toxic substance, either a micro-organism or a physiological product. Necropsies have thrown but little light, although a large number of cases have shown enlarged spleens, variations in the bone marrow and lesions of the cord, yet none of these seem to be of sufficient import to throw the weight of evidence one way or the other. Other cases have shown atrophy of the gastric tubules or other lesions of the intestinal tract showing the super-addition of a definite disease to a pre-existing one.

The finding of cases of pernicious anemia in infants, together with the pathological changes of the bone-marrow, showing a distinct return to the embryological character, may be of importance in our treatment of the disease, if not to its etiological findings. In the same manner might we use the presence of an increase of iron in the liver and spleen.

If then, as Bain suggests, we should take into consideration the enormous diminution in the red cells and the increased deposit of iron in the outer zones of the liver lobules, our inference can not be otherwise than that this destruction takes place in the portal system whether this hemolysis is produced by a special micro organism or to some substance of a pysiologic origin has not been determined. Until these points have well established the etiology of pernicious anemia, we must turn to the study of the treatment of the disease from the data which we have at hand.

The diagnosis, especially in the early stages, is of great importance and as the early symptoms are generally such as to suggest other diseases whose prognosis are more favorable, it would seem wise to take into consideration a differential diagnosis in order that we may early aid our patients and lengthen life, if we can not cure the disease itself.

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The early symptom, and one which always strikes the friends of the patient, is the lemon-yellow pallor of the face, which deepens gradually as the case develops. Beginning gastric trouble is often noticed, in fact, the patient more usually refers to this as the beginning cause of the disease. There may, however, be a good appetite, but there is accompanying this more or less dyspepsia shown in the flatuency, "heart burn," and later, vomiting and diarrhea. Dyspnea and palpatation on exertion is very marked, and a slowness of speech is oftentimes characteristic. Thus we see our beginning symptoms are to a certain extent symptoms that we might find in gastric cancer, in chlorosis and leucocythemia, and it is really by the examination of the blood that we make our final diagnosis.

The routine examination of the blood in these cases is of extreme importance, not only from a diagnostic standpoint, but to aid us in our prognosis. In gross appearance the drop as it emerges from the puncture is pale and watery, and what is especially noticeable is its great fluidity and its slowness in coagulating. The blood counts show a very marked decrease in the red cells. The average count, as placed by Cabot, was 1,200,000, the lowest blood count on record being 143,000. As a rule, there is also a diminution of the leucocytes, and in later stages of the disease this may become very marked. Hemoglobin is often very changeable, although a large number of cases show a relatively high percentage. The qualitative changes of the red corpuscles are very marked; not only do we notice the deformities in the shape of the red cells, but there always seems to be an increase in diameter, while nucleated red corpuscles are constantly found. A differential count of the white cells shows a lymphocytosis.

The following table from Cabot's Examination of the Blood, shows the prognostic value of the blood in pernicious anemia:

1. Severe (rapidly fatal).	2. Less severe (slower course).
a. Extreme progressive anemia.	*a*. Remissions.
b. High color index.	*b*. Normal, or low color index.
c. Increase in size of red cells.	*c*. Normal size cells.
d. Degenerative changes.	*d*. No degenerative changes.
e. Numerous megaloblasts.	*e*. Numerous normoblasts.
f. Few or no normoblasts.	*f*. Few megaloblasts.
g. Lymphocytosis.	*g*. Normal percentage of adult cells.

The efficacy of any plan pursued in the treatment of pernicious anemia must show not only an amelioration of the symptoms, but also a distinct change in the corpuscular elements. Iron has been shown to produce no permanent benefit and opinion is divided on the use of arsenic, although in those cases which are taken early, increasing doses of Fowler's solution, to the point of toleration, oftentimes shows an

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alleviation of the symptoms and the increase of the red corpuscles. Alcohol is practically of no use, although our malt liquors if borne well tend to retard the progress of the disease. In cases where there is a marked gastro-intestinal disturbance, Hunter has used intestinal antisepsis, avoiding thus a marked degree of fermentation, and relieving somewhat the discomfort of the patient. Transfusion of blood has been recommended, but it is of doubtful use. The giving of saline enematas to replace the loss of fluids is quite efficacious. All these methods, however, seem to be simply palliative and to my mind we should treat as far as we can the etiology, and although we may not know whether the cause is due to a micro-organism or to a toxic product, yet we know that by increasing the leucocytes in the blood, we are able not only to battle against an organism, but they are also able to absorb and carry off toxin products. For this reason in the two cases which I here mention, after trying other treatment, Protonuclein was used.

Mr. H., aged 50 years, had for two years shown a distinct loss of flesh and strength, together with a marked disturbance of digestion, shown by pain and nausea after eating. When first seen, his lips and conjunctiva were pale, his skin sallow and of a light-yellow tint; tongue was pale, with a light grayish-white coat. He had a marked continuous headache localized in the occipital region, although at times there was more or less pain about the right temple. He was greatly constipated and showed marked tenderness on pressure over the abdomen. Temperature 100.2°F.; pulse 92, and somewhat weak. Urine was somewhat scanty; high in color; S. G 1026. No albumin. Blood examination showed the red corpuscles 2,225,000, whites 5,000; hemoglobin 65 per cent. A differential count showed nucleated reds to be present, large lymphocytes 20 per cent, small lymphocytes 23 percent, eosinophiles 5 per cent, polymorphonuclear leucocytes 52 per cent. Patient had been taking arsenic for some six months, without any apparent gain. Was put on Protonuclein, three tablets every four hours, bland semi liquid diet was ordered, Trophonine being substituted for beef tea. A blood count on the second day showed a distinct increase of the leucocytes, this increase being evidently one of the polymorphonuclear leucocytes, as shown by a differential count. At the end of a week the leucocytes had reached 7,250. A differential count showing increase of the polymorphonuclear leucocytes to 65 per cent at the expense of the large lymphocytes. The patient already complained less of his headache and the gastric symptoms had abated. Although the symptoms had showed marked steady improvement, it was not until the end of the third week that there was shown any appreciable change in the number of the red corpuscles. They then had increased to nearly 3,000,000 and steadily increased until the end of three months, when no further counts were made, there being over

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5,000,000 reds at that time, and the differential count being nearly normal. The patient had gained over thirty pounds; symptoms had abated; the lips were red; he was put on careful diet; goes about his work with as much vigor as in former years.

Second case was seen in consultation for a differential diagnosis between gastric cancer and pernicious anemia in a gentleman 65 years of age. He had been losing flesh rapidly, had a marked lemon-yellow skin and distinct gastric disturbances with pain and tenderness on pressure over the pyloric end of the stomach. There was a distinct disturbance of the kidney, he passing only a quart of urine; S. G, being 1015 and there was one-fourth of one per cent of albumin present. A blood count made plain that the case was one of pernicious anemia. He was immediately put on Protonuclein, results being very marked, at the end of the fourth week he was out and about, had gained twelve pounds and his skin was clearing, while the gastric symptoms had entirely disappeared.

While these cases may appear isolated cases, yet the rational treatment as here given seems to me to worthy of attention.

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[MELROSE HIGHLANDS.]

Menstrual Irregularities.—"I have used your Dioviburnia in combination with Neurosine in menstrual irregularities, and I regard them the greatest panacea for female irregularities. Results were entirely satisfactory." C. M. Manpin, M.D., Webb City, Mo.

Obstinate Chlorosis.—Dr. Koenig, Wiesbaden, August 10, 1901, says: "It affords me much pleasure to report to you the very satisfactory effects of your Pepto-Mangan (Gude). I employed it in two cases of obstinate chlorosis of several months' duration, and in the case of two children, one of which was convalescent after a severe attack of influenza, while the other was in a condition of general weak-

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ness of rachitic origin. In all these cases, especially in the first named (chlorosis and convalescence), the preparation exerted an excellent tonic influence, while in every instance its action in stimulating the appetite and digestion was distinctly evident. In the first case a rapid recovery ensued with a prompt and regular return of the menses, which had been absent for many months, I am very glad to inform you of these satisfactory results, and shall, in the future, continue the use of this preparation, which is so worthy of recommendation as an agreeable chalybeate, and which promotes an increase of strength and assimilation."

Dysmenorrhea.—"I prescribed Dioviburnia and Neurosine (equal parts), in teaspoonful doses every four hours to Miss ——, 25 years of age, for dysmenorrhea, and obtained most gratifying results." A. Wm. Vogt, M.D., Oldenburg, Ind.

Acute Metritis, resulting many times from exposure to cold during menstruation, or from gonorrheal infection, usually manifests itself by a chill more or less severe, with pains in the lumbar or hypogastric region. The most satisfactory treatment for this condition is rest in bed, with an ice coil or bag on the abdoment over the uterus, followed by thorough flushing of the vagina with hot water, in which has been dissolved Micajah's Medicated Uterine Wafers (one to a quart of water). After the acute stage has subsided, a Micajah Wafer, inserted into the vaginal canal up to the cervix, will exert the antiseptic astringent action so essential in these cases.

Treatment of Catarrh.—It is conceded by many rhinologists and laryngologists that no remedial agent should be used as a spray or wash in the treatment of catarrh (the "bugbear" to the general practitioner of all diseases), which is not an alkaline. Germiletum, being alkaline (no acid reaction), is specially indicated in this disease. Doctor, if you have a case of catarrh that is giving you much trouble, it would be well for you to try Germiletum (wash or atomizer).

Phenacetin Patent Sustained.—The Phenacetin Patent of the Farbenfabriken of Elberfeld Company has been sustained by the United States Circuit Court of Appeals.

Druggists who have refrained from dealing in infringing Phenacetin will be gratified because exempt from the consequences to which infringers are liable under this decision.

Infringers will be relentlessly persued to the full extent of the law, because every one who has infringed has done so wilfully and with full warning as to the danger which they incurred.

Druggists will find it to their interest to carefully note the above decision of the Court from which there is no appeal.

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Collargolum.—Prof. Tillmanns, of Leipzig, in his "Text-Book of General Surgery," says the following regarding Collargolum: Credé recommends metallic silver in 0.5 per cent watery solution for internal administration or for subcutaneous intravenous injection, and in pill or ointment form for inunction in phlegmons, lymphangites, general septic infections, etc. No definite judgment can as yet be given as to the internal antiseptic action of the silver in general infections; the number of observations is as yet too limited. I often saw surprisingly favorable effects; in other cases there was no result. Unguentum Credé contains 15 per cent of silver, and is best inuncted into the back in amounts of 15 to 45 grains for twenty-five minutes. Pills, containing three-fourths of a grain of Collargolum, can be placed in wound cavities, in the inflamed peritoneal cavity, or for prophylactic purposes, employed there after operations.

Epilepsy.

For the past ten years I have been prescribing Neurosine with most excellent results, especially in Epilepsy and Neurathenia.

W. Hill Jude, M.D., Bloomington, Ill.

I have prescribed Neurosine in a number of cases of Epilepsy with very satisfactory results. I know of no remedy which is as efficient. A. Chas. Dogge, M.D., Helena, Mont.

I have given Neurosine a thorough trial in a case of Epilepsy, with a permanent cure, after the most prominent physicians of three of our neighboring cities had unsuccessfully treated him.

John McGlade, M.D.. Mt. Zion, Mo.

I consider Neurosine almost a specific in the treatment of Epileptics. H. S. Crockett, M.D., Wilmore, Ky.

I regard Neurosine as the very best preparation for that dreadful malady—Epilepsy. Geo. R. Duncan, M.D., Fall Branch, Tenn.

Neurosine has proven to be unexcelled in Nervous Diseases. especially Epilepsy. F. A. Malick, M.D., Corley, Iowa.

Disturbance of Nutrition is the cardinal point in the etiology of gout and rheumatism. In the transformation of products of disassimilation the liver plays a very important part; for it is here that nitrogenous bodies undergo the final changes which reduce them to urea. In faulty reduction by the liver and consequent failure of the emunctories, we have the basis of rational treatment of these diseases. In Tri-Iodides (Henry), an alkaloidal combination of phytolaccin, solanin, colchicin and hydriodic acid, with C.P. sodium salicylate, we have an iodine alterative well borne by the stomach, without injurious by-effects, covering the entire range of application of salicylates and iodides, and which fulfills all the indications suggested by our knowledge of gout and rheumatism.—"Medical Essays," Henry.

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CLINICAL NOTES.

Some Obstinate Bladder Cases.

By George W. Hopkins, M.D., Cleveland, Ohio.

John C., aged 31 years, patrolman; following exposure the patient experienced bladder symptoms as follows: Frequent urination, tenesmus, hypogastric pain and a temperature of 101.4°F. The urine was scanty, turbid and loaded with mucus. Diagnosis: Acute cystitis. Treatment consisted of rest in bed, restricted diet, anodynes for the tenesmus, diluent and alkaline drinks. The acute symptoms promptly subsided, but the urine continued abnormal despite the general measures employed and the internal administration of urinary antiseptics. Irrigation with boric acid solutions of varying strength proved unsatisfactory, as did also solutions of permanganate and silver nitrate similarly applied. A twenty per cent solution of Glyco Thymoline was then substituted for irrigation and the improvement was marked and continuous until recovery was perfect.

Harry R., 43 years of age, bookkeeper; had a history of bladder trouble of several years' duration; his urine was blood-tinged and loaded with mucus. Microscopic examination revealed an abundance of ammonia, magnesium phosphates, numerous disintegrating pus corpuscles, blood corpuscles and blood shadows. Repeated examinations with the sound gave negative results, but a skiograph taken with a high vacuum hard tube, revealed a small calculus which had persistently evaded the sound in previous examinations. Lithotomy was perform and the calculus removed, but the urine failed to return to normal. Irrigation in turn with boric acid, potassium permanganate and silver nitrate solutions, proved unsatisfactory. Glyco-Thymoline irrigations proved satisfactory from the start and recovery was ultimately perfect.

William L., aged 55 years, saloonkeeper; had a history of repeated attacks of gonorrhea which were never appropriately treated. Urine was voided with great difficulty, at frequent intervals, and was loaded with mucus. Reaction was alkaline and the microscope revealed an abundance of amorphous phosphates of calcium and magnesium, flat epithelial cells, disintegrating pus corpuscles and indigo crystals. Examination confirmed the diagnosis of chronic cystitis due to urethral stricture and hypertrophied prostate. Catelectrolysis by the slow method removed the stricture and Bottini's operation relieved

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the enlarged prostrate, but the urine failed to clear up as desired. The cystoscope showed marked changes in the bladder walls, but catheterization of the ureters yielded negative results. Appropriate urinary antiseptics were administered internally and silver nitrate solutions by vesical irrigation, with only slight improvement. Irrigation with a 20 per cent solution of Glyco-Thymoline gave early and continuous improvement until recovery was perfect.

The First Railroad Hospital in the World.

A recent trip over the Iron Mountain division of the Missouri Pacific Railroad brought me into conference with many of the local surgeons along the line I was struck with the wonderful growth of a system—so recent in its origin—which provides for the prompt medical and surgical attention to sick or injured passengers and employes. One or more skillful surgeons are located at every important point along the entire line, where every depot building is supplied with emergency cases, stretchers, and other facilities are in readiness for immediate use, if needed.

To the Missouri Pacific Railroad belongs the credit of having established the first system of railway surgery on the continent.

About the year 1869 or 1870 the late Dr. J. W. Jackson, then located at Washington, Mo., moved possibly by a remembrance of the Gasconade bridge disaster of fifteen years before, conceived the idea of providing special accommodations for railroad travelers and employes. In furtherance of this idea he established what was for a time known as "Dr. Jackson's Hospital." This was the first strictly railroad hospital in the world. It shortly thereafter passed under the control of the Missouri Pacific Railroad, and Dr. Jackson became chief surgeon, with local assistants along the line. A few years later —about 1878—Dr. W. B. Outten, then demonstartor of anatomy in the St. Louis Medical College, and living in Carondelet—now South St. Louis—where the extensive shops of the Iron Mountain road were situated, erected what was called the "Employes' Home," which was a hospital designed exclusively for the accomodation of railroad men, and in which sick and injured employes along the entire line were cared for with such skill as to attract the attention of the late A. W. Soper, who was at that time general manager of the Iron Mountain road.

Col. Soper was a noble specimen of true manhood, a man of kindly nature, and rare business integrity. His recent death in New York revived many tender remembrances of him. "Peace to his ashes."

At the instance of Dr. Outten, Col. Soper, upon his own motion,

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and without awaiting the action of the board of directors, directed him (Dr. O.) to proceed at once to divide the line of road into "districts," and to appoint local surgeons in every district. This work was completed in 1878, and out of it has developed one of the most important and efficient branches of railway service, the efficiency of which few, if any, roads in the entire country equals that of the Missouri Pacific road. This is the oldest railroad in the State, and it is wholly within the limits of truth, to say it is the best-managed one in the State.

But I want to write most about the Iron Mountain division of the Missouri Pacific, because I know most about it, having traveled on almost the first train (1868) that ran to Pilot Knob, its terminus for a time, and having lived at more than one point on the road. Having served it as its first local surgeon, and having traversed its entire length many times, I can write with a full knowledge of the facts.

From the very first it has been the fixed policy of the management to conciliate the people along the line. Its service has kept pace with all the improvements of the last thirty years. Its tariffs have been constantly lowered, until no complaint is now heard anywhere along the entire line.

The law did not require it (and does not now), yet more than ten years ago the Iron Mountain road reduced its passenger rates to 3 cents on all branch lines in Missouri and Arkansas, and still maintains this reduction, to the delight of its patrons, and the discomfiture of some competing lines.

This article is already too long, but medical journals are always so eager to report "rare cases," that I cannot forbear to here record one of recent occurrence, which ought to be extensively published, to the everlasting credit of the management of the Iron Mountain Railroad.

A few months ago the entire business portion of the town of Bismarck, Mo., some seventy miles south on its line, was destroyed by fire. Scarcely a merchant had a dollar's worth of insurance, and the loss in most cases amounted to "their all." Every one dispirited and penniless. There was not a shadow of proof that the fire originated from any negligence on the part of the railroad, and yet, after due deliberation by the board of managers, they fully and gratuitiously reimbursed every loss, aggregating a total of nearly $40,000. The town revived, turned from wood to brick, and the citizens knew not how to express their gratitude better than to honor the road by thereafter calling it "Miss Helen Gould's road."

In these days, when so much is being said about "soulless corporations,' this bit of history ought to be widely advocated as at least a "rare case" of pure generosity.

J. W. L., M.D.

318 N. Garrison avenue, St. Louis.

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Alcoholism.—I prescribed Neurosine with success in a case of alcoholism, with extreme restlessness and sleeplessness.

W. B. House, M.D., 218 W. 112th St., New York City.

Sciatic Pain—Prompt Relief. — In reporting his experience in the treatment of sciatica, Fred. E. Davis, M.D., of Brookside, Ala., writes as follows in *Annals of Gynecology:* "I have been giving antikamnia & heroin tablets a thorough trial in the treatment of sciatica and I must say that my success has been phenomenal indeed. I have also induced two other physicians to give them a trial and their success equals or surpasses my own. I meet with many cases of sciatica and until antikamnia & heroin tablets were introduced I was compelled to use a great deal of opium and morphine to relieve the pain. Since then, though, I have not given either. One of my patients had been confined to bed for three weeks during her last attack of sciatica. I prescribed one antikamnia & heroin tablet every four hours and in forty-eight hours she was up and about and has not felt the pain since. I thank you for the introduction of this most excel lent remedy and assure you of my willingness to report the results of still further investigation."

Carabana Water is a good thing. I am constantly prescribing it. I know of no water that is better as a laxative or purgative than Carabana. It is exceedingly useful in such diseases as Bright's disease, interstitial kidney, also relieving the kidneys of the strain put upon them. Of course, combinations of drugs can be prescribed which effect the same, but people prefer to take a water. Its value in torpid liver conditions is well recognized, and hence its value in many conditions, primarily dependent in great part upon such conditions, as hemorrhoids, etc. I do not want to change from Carabana to any other water of like qualities.—Abstract from a letter by Landon E. Edwards, editor of the *Virginia Medical Semi-Monthly.*

Dr. Louis F. Bischof, 229 E. 18th street, New York, writes: I have found Carabana an elegant and efficient aperient—much superior and more sure than any heretofore prescribed. It will give me great pleasure to continue same.

Trophonine an Ideal Nutritive in Phthisis Pulmonalis. By J. Leffingwell Hatch, S.Sc., M.D., F.R.M.S. (London), late professon of larynology in the New York Clinical School of Medicine and larynologist to the German West Side Dispensary: I have treated a large number of consumptives and have tried all sorts of artificial foods as well as the usual natural ones, but have never found anything that gave such wonderful results in the way of nourishment and gain in weight as Trophonine. Out of fifty-three cases that came under

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may care during the past year, nine were given Trophonine in conjunction with their normal diet and in every instance there was a gain in weight and improvement in physical condition. Especially in cases where the throat is involved it is of value, when deglutition became almost impossible. Trophonine can be swallowed because it soothes inflamed parts as it passes over them. Trophonine can be given per rectum and is retained with ease on account of its non-irritating nature. From the results I obtained in these cases, I am convinced that Trophonine is the best adjuvant to the patient's regular diet in phthisis.—Abstract from the *American Therapist.*

Eczema.—I take great pleasure in stating that I have used Germiletum in several chronic cases of eczema, with marked improvement. T. G. Horn, M.D., Colorado Springs, Col.

Disorders of the Stomach.—In many cases of catarrh of the stomach the contents often have been rendered neutral or alkaline by the administration of remedies and in these cases pepsin will have no effect. Chloropepsoid will act very promptly in these cases and will give immediate relief. It is indicated in atrophy of the gastric follicles, all irritable conditions of the stomach, slow digestion with flatus, etc. In many cases of severe neuroses of the stomach Chloropepsoid gives quick relief, although it contains no morphine or even traces of any narcotics. This analgetic effect is due to its powerful digestive action on the contents of the stomach.

Chloropepsoid has long since passed the stage of experimentalism and is now an almost daily prescribed medicine in most practitioners' offices. The remarkable success of Chloropepsoid since its recent introduction is entirely due to its intrinsic merits and to its prescription by the medical profession, not a single advertisement having been published or publicity of any kind made. Before being brought to the attention of the medical profession at large it was submitted to some of the leading hospitals for extensive clinical investigation; the results obtained were so excellent that its use was at once adopted and its therapeutic value was thereby established without the shadow of a doubt. It was not only used for gastric diseases with the best of results, but was also employed among invalids, in fevers, wasting diseases, etc., and gave in almost all cases perfect satisfaction, as it secures a complete digestion of any food taken, and thereby guarantees a fair nutrition and promoted metabolism. If the clinical reports alone would not pove the merits of Chloropepsoid, the unexpectedly rapid adoption of it by the medical profession would surely guarantee an exceptionally great merit.

Owing to the increase in the substitution of inferior and sometimes harmful remedies for those of well known and proved value we

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advise physicians for their protection as well as ours, when prescribing Chloropepsoid, to procure it from such druggists only whose reputation is a guarantee that they will not use a substitute. It is necessary to get the genuine preparation in order to produce satisfactory results, as Chloropepsoid is prepared by a method peculiar to ourselves and if not properly prepared the preparation is unreliable and in some cases of failure it has been owing to the substitution of an inferior article. The only safe way is to get Chloropepsoid in unkroken original bottles. The most preferable way to prescribe Chloropepsoid is the following:

℞ Chloropepsoid..... ℥ij
Syr. simpl..... ℥j
Aquæ..... ℥v

M. Sig.—One to two tablespoonfuls immediately after each meal and before retiring.

What are You Prescribing?—The popularity of any one product is a positive assurance that it will immediately have a host of imitators all greedy to secure the benefit of the reputation which it enjoys, due to its value. Inasmuch as substitutes are never as good as the original preparation, and many time positively dangerous, it is unnecessary to warn our readers against knowingly using these goods. One of the most popular preparations, and at the same time most extensively substituted is Micajah's Medicated Uterine Wafers. Their intrinsic value in the treatment of diseases of women makes it imperative that the original only be used, if you desire satisfactory results, and that the doctor prescribing should make it his duty to see that not a substitute is given his patient.

Dioviburnia and Neurosine.—I am prescribing Dioviburnia and Neurosine with the most satisfactory results.

W. Marion Barritt, M.D., Palmyra, Neb.

Borobenphene-Heil.—Henry Heil Chemical Co., St. Louis, Mo.: Replying to your favor of recent date, I will say I received your sample of Borobenphene-Heil some time ago, and I was well pleased with the results I have obtained from its use in quite a number of nose and throat cases. I am writing prescriptions for it quite frequently. I will consider it a favor if you will kindly furnish me with another large-size free sample for use in my office.

Yours truly, J. T. Hamilton, M.D.

Kansas City, Mo.

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CLINICAL NOTES.

Anemia.—Primary and Secondary.

By A. W. Latimer, M.D., St. Louis.

Primary anemia generally coexists with faulty metabolism and malassimilation, hence the tripod are synonymous and generally included under one condition—a condition that is more than an insufficiency of iron in the organism or a diminished amount of red blood-corpuscles and hemoglobin, as is generally understood in chlorosis.

When the most prominent feature of the disease is the pathological change in the blood constituents (chlorosis), it is generally amenable to treatment by many accepted chemicals, the most reliable and trustworthy of which are: Ferrium, in one of its numerous forms; malt extract; oleum morrhea, an emulsion with the hypophosphites; guaiacol carbonate, nucleins, and arsenous acid.

One of the most efficient and the one to which reference is made in these clinical cases is a combination of nuclein and ferrium,—a nucleinic acid iron under the title of Triferrin.

In the secondary anemias where it is the result of previous or complicating diseases—such as tuberculosis, chronic bronchitis, malaria, Bright's disease, pneumonia, la grippe, convalescence after typhoid fever, and for mothers while nursing infants the Triferrin answers a twofold purpose. Both these drugs are indicated, hence their combination results in a very happy and most efficient preparation, which the following histories illustrate:

Case 1.—Miss H., aged 23 years, single. Family history: Father and three sisters living, mother died of lobar pneumonia at the age of 40 years. Her previous history: She had the usual diseases of childhood, and at the closing year of school life (20 years) she experienced slight emaciation, loss of vigor, dry and parched skin, occasional epistaxis, loss of appetite, frequent headache and vertigo; generally constipated but occasionally a slight diarrhea. All the above symptoms have developed within the last three years. A blood count on November 21, 1901, gave Red cells 2,780,000, hemoglobin 52 per cent.

Treatment:

℞ Triferrin tablets.....gr. vijss each

Sig.—one t.i.d., post cibum.

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Examination November 30th: Red cells 3,250,000, hemoglobin 70 per cent, gain in weight, 3 pounds.

December 30th: Red cells 4,200,000, hemoglobin 84 per cent, increased weight to date, 6 pounds.

January 30, 1902: Red cells 4,650,000, hemoglobin 96 per cent, increased weight, 9 pounds.

There has been a decided improvement in the appetite and general well-being; rest is refreshing, digestion very good, headache and neuralgia have disappeared, bowels regular, menstruation regular and normal, and she is quite vigorous. No other medication was used with Triferrin except a mild saline aperient at intervals.

CASE 2.—Mrs. W., aged 27 years. Family history negative. Her health good until birth of second child one year ago, when she began to decline; general malaise, weakness, slight dyspnea, and increasing pallor of skin. Physical examination disclosed failure in nutrition, skin but slightly elastic, muscles flabby, general condition anemic, soft systolic murmur over apex of the heart, lungs and abdomen negative, urine of light straw color, specific gravity 1015, no albumin. Blood count, December 15, 1901: Red cells 2,550,000, hemoglobin 50 per cent, weight 105 pounds.

January 20, 1902: Red cells 3,750,000, hemoglobin 70 per cent, gain in weight, 3 pounds.

February 21st: Red cells 4,350,000, hemoglobin 82 per cent, gain in weight, 7 pounds.

March 22d: Red cells 4,800,000, hemoglobin 100 per cent, gain in weight, 15 pounds.

Since treatment began a marked improvement in the condition of herself and baby boldly bespeak the merits of the preparation. She eats and sleeps well, there is a complete return of muscular vigor, the skin has its normal color, no dyspnea even on exertion and the urine is normal. Only medication was Triferrin powders 7½ grains each three times a day.

CASE 3.—A. S., a young colored man, aged 17 years, had almost been exsanguinated by a severe attack of scorbutus. Repeated hemorrhages from the nose, mouth, stomach, intestines and bladder; the entire mucous membrane was involved. After getting the hemorrhages under control he presented a typical primary anemic case; he was very weak, there was a marked loss of muscular activity, dizzyness, extreme pallor of mucous membranes, a soft hemic murmur over apex of the heart and loss of flesh. No red cell count was made and the patient made an uninterrupted recovery by the administration of 7½ grain powders of Triferrin three times a day for six weeks; diet having been corrected.

CASE 4.—Mr. B. W., aged 48 years, white, married 18 years. Family history negative. Health, previous to one year ago, was good,

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but he was then compelled to give up work altogether, being emaciated and depressed, weak and nervous, loss of appetite, rest disturbed, a little cough but not troublesome, no expectoration until recently and shortness of breath. Physical examination elicited second stage of phthisis pulmonalis; the bacilli were readily found in the sputum. He was advised to change climate but not being favorably situated at that time he was put on the following:

℞ Triferrin.....
Guaiacol carbonate..... *aa* ℥iijss
M. Sig.—Ft. charts xxx, one powder t.i.d.

This treatment was continued for sixty days with little variation, resulting in a decided improvement in his general condition. He felt stronger, ate and slept better, took more outdoor exercise and was not so depressed. However, he still had slight evening fever and I advised him to go to Western Texas and continue the powders for thirty days. A letter received recently informs me that he has gained 15 pounds and is now taking no medicine.

A Systemic Alterative Effect.—The following from "Gaillard's Medical Journal," by Dr. A. H. Ashley, of Boston, Mass., will interest our readers because of the original way in which he expresses his pronounced admiration for something tried, trusted and not found wanting. The letter was written to our old friends, the Antikamnia Chemical Company, and reads as follows:

Gentlemen.—Your various combination tablets, as well as antikamnia tablets have been used by me for a number of years, and I can only say that they have uniformly given me the best results. But, my dear sirs, why have you waited so long to give us the very best combination of them all? I, of course, allude to your "laxative antikamnia & quinine tablets."

If there is anything known to the medical profession which will take their place in that class of diseases, where one wishes to relieve pain, control the temperature and at the same time produce, by laxation, a systemic alterative effect, it has not been my good fortune to find it. In those cases of severe neuralgia, and particularly in ovarian and menstrual pain, where morphine was our only hope (and where, after its administration, we had indigestion, bowels bound up, nausea, habit, etc.), you have in Laxative Antikamnia & Quinine Tablets a remedy which will, my experience has taught me, replace morphin and meet all requirements.

I am slow to be carried away by enthusiasm for any drug or combination of drugs, but I freely and voluntarily confess that in these tablets you have given to the profession a remedy so effective and re-

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liable in its action that it offers good excuse (or a mitigating circumstance anyhow) for a little effusion from one who, as a general thing, is not given to gushing.

With my best wishes for your future and many thanks for your elegant preparations, I am sincerely yours, A. H. Ashley, M.D.

Removal of Gunpowder Stains.—Dr. E. G. Corbett, of Hampton, Fla., ("Philadelphia Medical World," February, 1902) reports that on Christmas day, 1901, a boy, aged 12 years, filled a vaselin bottle with gunpowder and exploded the same. I arrived on the scene about three hours after the accident and found the cornea and sclerotic of both eyes and the face literally blown full of powder. I removed a dozen or more flakes of powder from each cornea with a foreign spud, and also removed the powder from the sclerotic. I did the operation under a 4 per cent solution of cocain. After the operation I used a 15 per cent solution of Hydrozone in the eyes. After removing the particles of glass from the face, I kept a cloth over it saturated with a 50 per cent solution of Hydrozone. At the end of two weeks I used a saturated solution of boric acid in the eyes and painted the face twice daily with equal parts of Hydrozone and glycerin. The eyes are now well and the powder stains have disappeared from the face.

Pepto-Mangan (Gude) acted extremely well in all cases in which it was employed. In the case of my patient, who has suffered for a long time with neurasthenia in consequence of anemia, a prompt and visable improvement always ensued. I will continue to recommend and employ Pepto-Mangan in the future in appropriate cases.

Dr. Fritz Thelemann, Surgeon General, Coburg.

The Rational Treatment of Prolapsus Uteri.—This condition so generally prevalent in woman and only afforded temporary relief by the use of pessary can be more rationally and satisfactorily treated by relieving the burden thrown upon the round ligament which supports the uterus by depleting this engorged and congested member of its abnormal blood supply, we suggest the following procedure:

1. The uterus and entire uterine canal should be thoroughly cleaned by flushing with hot water.

2. The use of an astringent antiseptic should next be employed which will contract the uterine capillaries and blood-vessels.

3. The ligaments and surrounding tissues must be toned up to enable them to more rapidly regain their normal tonicity.

As a remedy particularly adaptable in the above condition, Dr. M. A. Wheeler, attending physician to the Rensselaer County Hospital, Troy, N. Y., highly recommends Micajah's Medicated Uterine

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Wafers, and says that after many years of practice he places his sole relience upon them. These wafers combine the aseptic and astringent action so imperatively required and also tone up the relaxed condition of the uterus and its adnexa. Leucorrhea, so often prevalent in these cases, will rapidly disappear under this treatment.

An Obstinate Bladder Case.—John C., aged 31 years; occupation, patrolman. Following exposure, the patient experienced bladder symptoms, as follows:

Frequent urination, tenesmus, hypogastric pain and a temperature of 101.4°F.

The urine was scanty, turbid and loaded with mucus.

Diagnosis.—Acute cystitis.

Treatment consisted of rest in bed, restricted diet, anodynes for the tenesmus, diluent and alkaline drinks.

The acute symptoms promptly subsided but the urine continued abnormal despite the general measures employed and the internal administration of urinary antiseptics.

Irrigations with boric acid solutions of varying strength proved unsatisfactory, as did also solutions of potassium permanganate and silver nitrate similarly applied.

A 20 per cent solution of Glyco-Thymoline was then substituted for irrigation, and the improvement was marked and continuous until recovery was perfect.

Sulpho-Saline Waters.—Mr. F. A. Henry, of the Henry Pharmacal Company, Louisville, Ky., well known to the medical profession through his connection with French Lick Springs (Pluto), has recently acquired control of the waters of West Baden, and it is his intention to bring even more prominently before the medical profession the therapeutic value of the two famous sulpho-saline waters of this valley—Pluto of French Lick, and Sprudel of West Baden. They are always active and very desirable saline purgatives for the surgical wards of hospitals and infirmaries, and for home treatment by practitioners of all those diseases in which waters of this class can be applied.

Atrophic Catarrh.—Authorities, and our experience teaches that the most important consideration in the treatment of chronic nasal catarrh is to keep the nasal cavities free from crusts. The first step toward the amelioration of this prevalent disease, is cleanliness. A generous use of an alkaline antiseptic with spray sufficiently stimulating to encourage the formation of new blood-vessels and invigorate those that have remained, thus increasing nutrition and the formation of regenerative elements. The remedial agent should be solvent to

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facilitate the removal of all offensive and excessive secretions with the accumulations. That which has proven to be the ideal solvent and stimulating alkaline antiseptic, is Germiletum; by its persistent use twice or thrice daily, full strength or diluted where the mucous membrane is sensitive, will effectually cure the most advanced case of chronic nasal catarrh. In chronic cases of long standing persistent treatment is necessary.

Parke, Davis & Co.—The firm of Parke, Davis & Co., of Detroit, Mich., manufacturing pharmacists, have adopted the policy of other large corporations of encouraging its employes to become shareholders. This company proposes to issue 4,000 shares of its capital stock, and permit the oldest among its employes, especially those in important positions—as managers, superintendents and foremen, to purchase this new stock at $55 a share. The present market value of the stock is $70 a share, and its face value is $25.

Uterine Troubles.—I have been prescribing Dioviburnia for several years in all form of uterine troubles with much success. It does all that is claimed for it, and more, and I cheerfully recommend it to the profession as the remedy par excellence in all uterine derangements. M. B. Pollard, M.D., Gadsden, Ala.

Syrupus Roborans as a tonic during convalescence has no equal. As a nerve stimulant, restorative and constructive it is unexcelled. Samples free, physicians paying express, upon application to Arthur Peter & Co., Louisville, Ky.

Bovinine.

Is live blood. It is defibrinated arterial blood.
It is preserved by cold process and sterilized.
It retains all the vital and nutritive elements.
It aids digestion and is rapidly assimilated.
It renders unnecessary the use of cardiac stimulants.
It is a powerful aid to all forms of medication.
The Bovinine Co., 75 W. Houston street, New York.

Nervous Affections.—I have been using Neurosine for several years with excellent results in nervous affections of different kinds.
Howard H. Herman, M.D., Dayton, Ohio.

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CLINICAL NOTES.

Massage.

By Edward B. Jackson, M.D., New York.

In speaking of massage it is not necessary to define the term further than to say it is the act of manipulating the body in such a manner as to modify its functions in part or as a whole.

The term, "Masseur," as applied to the persons who practice the art. General massage is produced by kneading, striking, scrubbing and other modes of moving the tissues of the body so that the arterial, venous and lymphatic circulation is changed and the terminal nerve filaments stimulated, thus affecting the entire nervous system.

The main irregularity concerning the technique of massage is the degree of passive motion and pressure, thus influencing the desired efficacy of the treatment.

Heretofore the physician and patient have been dependent on the masseur. Masseurs differ in the mode of administration or knowledge of the art they follow; consequently, there is always a variation in activity or pressure, and the result is often different from that expected or desired; this is because masseurs are human—they tire! Massage is hard work.

The Vibratile, which is a scientific electrical instrument, made by Hutches & Co., 117 East 23d street, New York City, overcomes the difficulty or difference of manipulation. It is a device with a range of adaptability for giving a thorough massage to the deep seated tissues, whilst so easily regulated that it may be used over the most delicate membrane without injury.

A judicious use of the Vibratile is followed by a pleasant sense of renewed vigor and energy throughout the whole body and a re-establishment of the mental equilibrium.

The complete apparatus can be procured for $25 00, and we recommend it to every progressive, up-to-date physician.

Eczema Capitis.—I have used Germiletum on a very stubborn case of Eczema of the hands and face, and am glad to say, with perfect satisfaction and with a decided improvement in 24 hours. I have since prescribed it for Eczema Capitis, in a girl, aged 12 years, with the same happy results. C. C. Gentry, M.D., Webb City, Mo.

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Commonwealth of Massachusetts.

Middle sex, ss: Superior Court in Equity.

THE M. J. BREITENBACH COMPANY, Complainant,

vs.

HENRY THAYER & COMPANY, Defendant.

DECREE.

The above entitled cause having come on to be heard, and a trial having been had, and the evidence offered by each party having been received and considered, and it appearing to the Court that the use of the wrapper and package employed by the defendant for its preparation of iron and manganese, as described in the Bill of Complaint, is calculated to deceive the public and enable the defendant's preparation to be passed off as the preparation of the plaintiff known as Gude's Pepto-Mangan, now after hearing Messrs. Paul & Barnard and Philip Carpenter, of counsel for the complaint, and J. E. Maynadier, for the defendant, it is hereby

Ordered, Adjudged And Decreed, That the defendant, Henry Thayer & Company, its directors, officers, agents and servants, be and they hereby are enjoined from making or using in any way, the terra cotta colored wrapper with white letters thereon, and the package in connection therewith, heretofore used by the defendant, for its preparation of iron and manganese, a specimen of which wrapper is annexed to the Bill of Complaint and marked "B," or any other wrapper or package therewith which imitates the wrapper used by the complainant, the M. J. Breitenbach Company for its Gude's Pepto-Mangan, a specimen of which wrapper is annexed to the Bill of Complaint and marked "A," and from selling or offering for sale any preparation of iron and manganese in any package or wrapper of terra cotta color with white letters of the same style, shape and general arrangement as those of the aforesaid wrapper used by the plaintiff, the M. J. Breitenbach Company, and from using the words "Peptonate-Manganese" on or in connection with such terra cotta colored wrappers with white letters of the same style, shape and general arrangement, as those of the exhibit "A."

And the defendant is directed to forthwith deliver to the plaintiff or its attorneys, to be destroyed, all terra cotta colored wrappers and packages aforesaid like the said exhibit "B," which the defendant now has on hand or in stock or under its control in any way.

And It Is Further Ordered, Adjudged and Decreed, That the defendant, Henry Thayer & Company account the plaintiff, the M. J.

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Why Coca is a Panacea.—How many of our readers appreciate the true value of Coca as an all around remedy! Not Cocoa, from which Chocolate is made, but Coca, from which that potent substance Cocain is produced. It requires one ounce of Coca leaves to make one grain of pure Cocain, and that alkaloid is but one of many contained in these marvelous leaves. It is because of the modified action of all the constituents that the whole drug is possessed of different therapeutic properties, and is specifically greater than any one of its parts. Coca is a nervous-stimulant, acting primarily on the cerebral cells, but in this action having an elective affinity for the respiratory center and a chemico-physiological depurative influence on the blood. It is from this latter cause that Coca has such a wide-spread usefulness, which seemingly classes it as a panacea for all ills. With a purified blood stream, the organs of assimilation and the muscular and nervous systems are not only repaired, but maintained in equilibrum.

Unlike any other nervous stimulant Coca is not followed by depression, though in full doses a brief period of depression may precede its physiological action. This indicates the employment with Coca of a deffusible stimulant which after an evarnescent period speedily gives place to the drug. The difference between the action of alcohol and Coca is well illustrated in the anecdote of the Andean Indian, who, given the first taste of whisky and asked his idea of its effects compared with Coca, replied:—"Coca helps a man to live, but whisky makes him row a boat."—("Mortimer's Peru: History of Coca," p. 224)

Thus the combination of wine with Coca such as in the well known Vin Mariani, is not only purely scientific, but a commendable preparation that presents an agreeable means of exhibiting the positive merits of properly preserved Coca.

Psoriasis.—Henry Heil Chemical Co., St. Louis, Mo.: Please accept my many thanks for your new preparations, "Glycobenphene-Heil and Borobenphene-Heil," which you so kindly sent me. I have tried Glycobenphene on a skin eruption which I diagnosed as Psoriasis, and was surprisek at the excellent results. I am more than pleased with your preparations and will give them a thorough test.

Wakenda, Mo., O. D. McCray, M.D.

Breitenbach Company for all profits which the said defendant has made from sales of said preparation in its said wrapper and package, and for all profits which the plaintiff would have made in the sales of its Gude's Pepto-Mangan but for the use made by the defendant of its said wrapper and package, and also for the damages to the reputation

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and standing of the plaintiff's said preparation, known as Gude's Pepto-Mangan, by reason of the use by the defendant of its said packages and wrappers, and of its preparation therein contained, and for the damages otherwise sunstained by the plaintiff by reason of the matters charged in the complaint.

And It Is Ordered, Adjudged And Decreed, That the plaintiff recover of the defendant the costs of this action.

By the Court, Theo. C. Hurd, Clerk.

A true copy. Attest: (Signed) Theo. C. Hurd, Clerk.

Contagious Diseases.—Persons attending a contagious case should change clothing on leaving and entering the isolated apartments. Dresses of washable material should be worn.

Inhalation of the patient's breath and infectious particles of matter should be carefully avoided, also touching with the lips any food, drink, cup, spoon, or other article that the patient has touched. After handling the patient, the hands should be carefully washed, dipped in a mixture one parte of Platt's Chlorides and ten parts of water, rinsed in pure water, dried and finally rubbed with cocca-butter or cold-cream. Should there be any scratches, cuts or sores on the hands, the occasional application of flexible collodion will obviate infection. No cloth or towel that has been near the patient should be used in wiping or drying the face or hands.

Leucorrhea and Gonorrheal Vaginitis.

℞ Cerevisine (saccharomyces cerevisæ)..... ℥iij
Glycerin of Starch (cold)..... ℥ij
Make into a paste.

This is recommended as a specific for persistent vaginal discharges (especially old standing cases), by Dr. Chapelle of Paris, and has proved almost universally successful and is now very largely used to destroy by phagocytosis pathogenic germs which invade the vagina.

A portion of the paste made up in a ball about the size of a walnut, should be placed in the vagina, well up against the cervix and retained in position by a tampon of absorbent cotton. The treatment is perfectly harmless and if persisted in for a week or ten days, will give marked beneficial results which will be maintained, especially if the patient is sustained by liberal diet and tonics such as phospho-glycerate of lime wine. Cerevisine is a pure form of the yeast plant, desiccated at a low temperature.

Trusses and Supporters.—G. W. Flavell & Bro's solicit the physician's patronage direct for all kinds of elastic trusses, abdominal supporters and elastic stockings.

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CLINICAL NOTES.

Nasal Catarrh, with Especial Reference to the Correction of the Fetor of Ozena.

By E. B. Jackson, M.D., New York.

There are many stages of rhinitis, it will not here be endeavored to detail the varying anatomical characters. It is sufficient to be reminded of the salient marks along the burrowing tracks of this old enemy; and after alluding to the most important points concerning the different phases of the disease, we will undertake to speak more particularly of the extreme stage—ozena.

Preparatory to understanding the physiological condition in rhinitis, it may be stated that the start is made in catching cold, *i.e.*, coryza, sneezing, congestion of the nasal mucosa, turgescence of the erectile tissues of the nares, engorgement of the sputum, which may be so extensive as to preclude the possibility of the respiratory function through the natural channel.

Some hours—usually not exceeding forty-eight—after these conditions are seen to prevail, a seromucoid leakage is established, the general tumefaction is relieved, febrile movement subsided, and the case merges into chronic rhinitis, unless it be immediately cured with intelligent treatment.

These attacks are usually the result of transition from warm to cold surroundings, though they are often the result of exanthematous febrile manifestations. Occasinally they come as the result of breathing pungent air, laden with irritating particles, such as are furnished by certain drugs, metals, and the pollen of plants. The gouty detritus in the blood may often be the initial factor in igniting the nostril into inflammatory action.

It will be readily seen that the disease, if permitted to progress, will shortly untone the blood vessels; will produce a hyperplastic condition of the erectile tissue; will chronically thicken the epithelial lining, blunting permanently its valued function, and will extend probably further into adjacent quarters, engendering deafness, cough, sore throat and hoarseness. If caries of the turbinated bones and necrotic invasion of the soft superstructures should become estab-

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lished, as an intercurrent process, ozena, with its diabolical stench, is the result.

Treatment.—At first, when the disease is acute, rest in bed and sedatives are essential. Three drops of liq. opii. sedative, every hour until five or six doses, as the case may require, will be found to act excellently. This, if we rightly recollect, is the old German treatment for cold, and we can assure its virtue if the patient be sent to bed.

The pain and swelling may be easily and harmlessly relieved by a two per cent cocaine spray, which benumbs the sensibility of the Schneiderian membrane, and paves the way nicely for the antiseptic and astringent douche. We use Glyco-Thymoline, because it is deodorizing and agreeable to the patient. It favors the rapid resolution of the inflammatory process, fosters cell growth, and thus aids markedly in the repair of the eroded mucosa. The bowels must be regularly emptied, any taints of constitution which may be discovered must, of course, be corrected by specific treatment.

Tonic remedies are often required for cases suffering unconsciously of latent malaria. There may be complications of gout, rickets, syphilis, scrofula, scurvy or lead poisoning, and it is needless to emphasize the effort which may be required in determining the origin of the lesion. When the case has matured into ozena, much systematic cleansing, by means of a disinfecting douche, which shall reach the posterior nares and carry away the putrefying retained excretions, is necessary; in fact, indispensible. We doubt the utility of sprays, and ointments so frequently used, for the very good reason that the one is, in our experience, ineffective, and the other cumbersome and nasty. We have tried spays of chloride and bicarbonate of sodium; of carbolic and boric acid, and of many complicated formulæ, too numerous to mention, and all failed to render the parts sterile. We have tried iodoform, phenic acid, zinc and mercury, in ointment tampons, placed alternately in the nostrils; but, as before stated, this is a distasteful procedure to the patient, and will not cure the case if the disease be already established in the posterior nares. It will likewise not remove the decomposing secretions; and everyone readily concurs that gummy scabs and necrotic flakes must come away, and the membrane rendered aseptic before any progress can intelligently be expected. An antiseptic fluid must be made to flow through nares and post nares, dislodging excrementitious *débris*, sterilizing the submucus denuded structures, and deodorizing the channel thus insuring the aid which nature requires in building lost tissue. The character of detergent wash best adapted to this purpose is undoubtedly Kress-Glyco-Thymoline. There is nothing to equal the simplicity with which it is applied—with the Bermingham nasal douche—and it is a superior antiseptic and deodorizer. The first and most pronounced result of a Glyco-Thymoline nasal bath is the instant

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restoration of easy respiration through the nose; whereas, before, there was probably dyspnea, even during the process of breathing through the mouth. This agreeable remedy may be applied with safety to young children of scrofulous and rachitic habit, who often suffer with ozena. The cost of the little crystal apparatus is small, and since its convenience and simplicity passes anything which has yet come to our knowledge, we believe it should occupy a place in every household, accompanying the toothbrush and other articles necessary to the daily toilet. We believe and teach that the nasal cavity requires no less hygienic attention than the buccal and aural respectively.

The object sought is regular and complete sterilization of the membrane, so that nature may oppose and ward off diseased action. With proper care of the constitution and correct local measures of hygiene, the percentage of the nasal affections can be surprisingly reduced, if Glyco-Thymoline be regularly and persistently used.

The Treatment of Eczema on Modern Lines.

BY A. H. OHMANN-DUMESNIL, A.M., M.D., St. Louis, Mo.

CONSULTING DERMATOLOGIST TO ST. LOUIS HEALTH DEPARTMENT.

[Synopsis of Original Paper.]

The modern trend of pathology is to be bacteriological. We daily find investigators publishing the results of their researches; and, in many instances where such was not suspected, bacteria have been found to be the cause and origin of the diseased conditions which exist. In no department of medicine has this been more prominently exemplified than in skin diseases, and he who keeps posted on them has noted this fact. The mistake must not be made that these bacteria are mere Saprophytes. They have been proven to be of a more or less specific character in the way of always producing the same affection, and of always being found in that same condition. This is certainly sufficient proof of its specificity, and the further fact is found that the remedies which cure the disease will also destroy the bacteria, when they are removed from the soil on which they have been originally found. And the converse is equally true. Those agents which will destroy the bacteria *in vitro*, will do so upon or in the living tissue; but, one thing should never be lost sight of—the agent to be curative should not be irritating or destructive to the tissues. It is this last fact that has rendered so many antiseptics detrimental. * * *

Eczema has been chosen because it is the most common of the numerous skin affections, and is one which occurs and is observed the

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more freqently. It also forms the type of those inflammatory skin diseases which are accompanied by painful and disagreeable subjective symptoms which at times become most unbearable and subject patients to a life of torture. * * *

The mental agony and physical distress can only be thoroughly appreciated by those who have suffered from the trouble. If, of an inquiring turn of mind, their investigations will teach them that there exists a marked degree of acidity in the exudates found is eczema. Moreover, as pointed out by Hardy, of Paris; Piffard, of New York, and many others. the rheumic, dartrous, or uric acid diathesis is a strong predisposing cause to the inception and continuance of the trouble. In fact, these authors, until very lately, endeavored to refer all cases to these causes, and strongly advised alkaline treatment, both internally and externally. No one, of course, will deny that the elimination of the gouty, rheumatic, or uric acid diathesis is of the greatest benefit; for, the tissues of a low grade brought about by the presence of these conditions, will recover their tone in a greater or less degree. But, it is equally true, that the eczema will persist unless other methods are adopted. * * *

At the last meeting of the International Congress of Dermatology and Syphilology, held in Paris, in August, 1900, the first question which had been offered, and was pretty well thoroughly discussed, was that: "On the Parasitic Nature of Eczema." Unna, of Hamburg; Jaddasohn, of Berne; Scholtz, Raab and Kreibig, James Galloway and J. W. H. Eyre, of London; L. Brocq and Veillon, of Paris; Juan de Azua and Antonio Mendoza, of Madrid; Arthur Whitfield, of London; and Morgan Dockrell, of London, all pronounced themselves in favor of the parasitic origin of eczema. Their reasons and arguments can not be reproduced here, as it would require too much space. * * *

Whilst the many antiseptics which are, in some degree, successful in relieving the symptoms and lesions against which they are directed, they do not effect a cure. The symptoms will return, and this condition is termed a relapse, and a return is made to a modification of the same method, whose essential nature remains the same. What this nature is, may be easily surmised by an attentive reading of the active ingredients. It is essentially acid in nature, and that is the very thing against which due guard and caution should be taken. So that one of the conditions of a successful method of treatment is that it should be alkaline. This alkalinity must not not be excessive, or irritation will be the result. An alkalinity very nearly, if not exactly similar to that of the blood, would be physiological and naturally, the most rational to adopt. In the next place, a requisite is that the remedy used should be a bactericide. This is indicated, and even rendered necessary by the findings of those who have thoroughly investigated the

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etiology of eczema. It is these conditions which have been at work in the search for and production of an agent which would combine these qualities. Its application, naturally, would not be confined to eczema, but would be made to cover the immense field requiring a non-irritating, active antiseptic.

The production of such a germicide has been successfully accomplished, and physicians will now be enabled to use it without the fear of corroding tissues by a preponderance of acids, and surgeons also find that there has been offered at last a bland antiseptic which, while powerful in its properties as a germ destroyer, is not in the least degree prone to produce pain or other disagreeable symptoms. This has been accomplished by the production of Germiletum, whose composition is a slightly alkaline chemical solution of borohydrofluoric acid, borosalylbenzoic acid, boroglycerine, formaldehyde with potassium permanganate, menthol, thymol, and antiseptic aromatics. It is a liquid, and its properties are those of a slightly alkaline antiseptic. miscible in all proportions with water. In consideration of the fact that this remedy possesses these qualities, it becomes immediately apparent that it is not only indicated in bacterial skin diseases, but can be profitably used as a prophylactic for their prevention. Its applications in dermatology are numerous, as in eczema, impetigo, erythema, erysipelas, and a host of other local bacterial diseases, which have a tendency to spread rapidly.

The value of Germiletum as a non-irritant germicide is further accentuated by the fact that its use has been followed by such excellent results in surgery, gynecology and obstetrics. A great advantage possessed by this antiseptic is that it acts as well where there is a break in the tissues as on an unbroken surface. * * *

The good results obtained from its use in skin diseases of bacterial character, more especially eczema, has led to these few remarks. The fact that Germiletum has such a good effect upon inflammatory diseases of the cutis of a bacterial nature, is a sufficient proof of what its action should be in analyzing inflammatory conditions of the organs and tissues. * * *

The antiseptic aromatics which it contains will immediately make it gain favor with the patients, and they will readily consent to its prolonged use, where it would soon be discontinued did it possess a disagreeable or repulsive odor. * * *

Hydrotherapy.

In a very interesting brochure, Dr. E. Monin, Secretary-General of the French Society of Hygiene, gives a detailed description of the valuable properties of the Spanish mineral water, Carabana (George J.

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Wallau, Sole Importer, 2 and 4 Stone Street, New York), known also as La Salud (Health). Carabana water is derived from a province of Madrid. This water is highly esteemed by Spanish physicians, and has received the indorsement of the French Academy of Medicine. The composition of Carabana renders it of peculiar efficacy. It contains the sulphate and the sulphite of sodium, the sulphate of magnesium; the chlorides of sodium, magnesium, and calcium; the phosphate of sodium, and a trace of alum. It is remarkably constant in composition; is a clear, transparent, and limpid fluid of an alkaline reaction, entirely free from organisms. Carabana is a cathartic, sanguifacient, antiseptic and antipyretic. It likewise promotes the nutritive processes. The comparatively small proportion in which magnesia is present permits the use of Carabana by those predisposed to the formation of ammonio-magnesian calculi. In patients suffering from disease of the bladder and urinary passages, Carabana is the preferred laxative.

Carabana water is markedly beneficial is visceral congestions, secretory disorders in general; moist skin diseases, as eczema and herpes; and in the lymphatic and herpetic diathesis. Carabana is of value in the management of rheumatic and syphilitic patients, more particularly when these have abused the salicylates, arsenic, iodides and mercury.

Carabana leaves no disagreeable bitter taste, dryness in the mouth or thirst, and does not produce lassitude. Its laxative action is rapid but gentle. It does not give rise to sickness of the stomach or griping pain. In small doses it has a sedative and antiphlogistic effect. In fractional doses it is serviceable in those of languid circulation and depressed nutrition as well as in convalescence attended by gastro-intestinal failure.

Carabana is an admirable remedy in many forms of dyspepsia, whether of gastric or intestinal origin. It produces regular evacuations, while at the same time it gives tonicity to the muscular coat of the alimentary tract. It acts likewise as a reliable intestinal intiseptic. It is of particular advantage in atony of the stomach; relieves gastralgia and arrests the gastrorrhea of drunkards. The special utility of Carabana is in constipation; but when we reflect upon the diverse and numerous morbid conditions engendered by habitual constipation, we may readily recognize the wide range of usefulness of this natural water. Constipation is the fruitful source of autointoxication and of different forms of depravity of the blood. In diseases of the bowel Carabana is no less valuable than in those of the stomach. In affections of the liver Carabana has been found of signal efficacy. Its influence is exerted both upon the biliary and the sanguifacient functions of that organ. It allays catarrh of the biliary passages. It relieves engorgement of the liver and jaundice. In the more remote

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troubles which depend upon disturbances of the functions of the liver Carabana may be used with excellent effect. It is directly beneficial in enemia, affections of the heart and lungs, in neuralgia due to retentions of excrementitious material, in nephritis, dropsy of various forms and in obesity. In short, Carabana may be advantageously employed in those multitudinous pathological conditions which are dependent upon or associated with inactivity of the gastro-intestinal apparatus.—Extract from the *French-American Therapist.*

Analysis of the water, showing its superiority over other aperient waters.

One liter of Carabana Water contains:		GRAIN.
Sulphate of soda		100.1110
Sulphuret of sodium		0.0499
Sulphate of magnesia		3.0711
Chloride of sodium	2 gr.	1.6000
Chloride of magnesium	2 gr.	0.4774
Chloride of Calcium	2 gr.	0.1967
Phosphate of soda		0.0210
Alumina		0.0005
Anhydrous salts		106.0826

New Treatment of Leucorrhea and of Gonorrheal Vaginitis.

BY PH. CHAPELLE, M.D., PARIS.

Yeast in the treatment of chronic leucorrhea, and vaginitis due to gonorrheal infection, has recently been tried with considerable success. Dr. Landau, of Berlin, was the first to apply it locally by injection for troublesome vaginal secretions and found small quantities produced a rapid and complete arrest of the discharge after a few weeks.

Murer, in France, has used it in the same manner in gonorrheal discharges from the vagina and found yeast most effective in suppressing inflammation of the mucous membranes, which regained their color rapidly. In the gonorrhea of men, however, it was not uniformly successful. In leucorrhea and gonorrheal vaginitis there occurred a substitution of a morbid fermentation, for a non-dangerous yeast fermentation, for the yeast-cells (saccharomyces cerevisæ) appear to devour the morbid germs, which set up inflammatory conditions.

Backer, who has made a study of the various ferments, is of the opinion that the natural toxins, however altered, may in the treatment of disease be replaced with advantage by ferments in the living state. He considers good health to be one of normal fermentation, and bad health one of morbid fermentation.

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Hence, pure ferments like yeast attract pathogenic germs, allow themselves to be penetrated by them and once enveloped, destroy them by a true phagocytosis. D'Arsonval and Charrin have also made a series of investigations on the reciprocal action of microbes on vegetable cellular tissues, and it would appear that in the case of yeast, in its struggle with pathogenic germs, it expends it energy as a ferment, acting consequently by reason of its phagocytic properties.

We see, therefore, why the treatment of leucorrhea and other vaginal discharges with yeast, is based on reasonable grounds and it should, therefore, be tried in obstinate cases which do not yield to tonics and the usual local treatment.

The application of yeast in this connection is not convenient owing to its keeping badly, its offensive smell and the difficulty of obtaining fresh supplies, as well as its inconvenient frothy nature, which makes it difficult to be retained when injected. This, however, can be overcome by using the pure desiccated form, known as Cerevisine, which may be exhibited in the form of a pessary of cocoa butter filled with Cerevisine and placed in position on going to bed, or a paste made up with glycerine and starch and retained with a tampon of absorbent cotton, or again applied by dipping absorbent cotton in a thin paste of Cerevisine and water. The quantity for application is not important, as it is perfectly harmless, but from one to two teaspoonfuls can usually be introduced and retained in the vagina during the night which will give more cleanly and comfortable results than injections of brewer's yeast during the day.

Agents for Cerevisine, E. Fougera & Co., New York.

Dysmenorrhea.—In the congestive type of dysmenorrhea, in which the painful menstruation is usually due to some inflammatory condition of the pelvic organs, especially the uterus, much benefit is derived from intravaginal applications that will relieve the engorgement of the parts. Tampons soaked in glycerin and boric acid, or iodide, or ichthyol have been largely used for this purpose, but this has only been in the absence of something better, since the inconvenient and disagreeable nature of the tampon treatment has always been recognized. The modern way of accomplishing the same purpose in a far more efficient, cleanly and convenient manner is by the use of Micajah's Medicated Uterine Wafers. They are easily introduced into the vagina, are unirritating, and do not require removal. Their ingredients are gradually liberated, exerting an astringent, antiseptic and anticatarrhal action upon the congested and inflamed parts. The congestion is relieved, the circulation regulated, the absorption of exudates promoted and the dysmenorrhea thus permanently removed.

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For Sale.—Doctor, I will sell my eye and ear practice here, which is paying over $500 a month. Business new, clean and up to date. If you can handle the work, and are looking for something in this line, it will pay you to investigate.

DR. SEYMOUR, 1013 Texas Ave., Houston, Texas.

Borobenphene and Glycobenphene.—J. M. Rader, M D., St. Louis, writes: "It is not my cnstom to recommend every sample that I receive, but in your Borobenphene and Glycobenphene (Henry Heil Chemical Co., 212–214 South Fourth street, St. Louis) I find an exception to my rule, as I do not believe there is any skin disease, acute or chronic, that will resist Gylcobenphene combined with Borobenphene. I find them especially adapted to the various forms of eczema, but. of course, the doctor must know how to treat them, for there is no remedy known to-day that will cure all cases by merely local applications; every case is a little different. I have no trouble in curing any case with Glycobenphene, also Borobenphene, and in genito-urinary practice, also gynecology, they are par excellence. I can cheerfully recommend them to my brother practitioners. Please accept thanks for sample sent me of your splendid remedies, Boroben phene and Glycobenphene. I should have acknowledge receipt of them before, but wished to give them a fair trial before reporting."

Urotropin.—Prof. W. F. Loebisch, Director of the Laboratory for Applied Medical Chemistry at the Imperial and Royal University of Innsbruck, in a discourse held before the Medical Society of that city, details at length the results of his experimental researches upon the influence of Urotropin upon intestinal decomposition. In spite of the demonstration of the inhibitory influence of the drug upon the development of the bacterium coli by Nicolaier, and of its destructive effect upon typhoid bacilli in the urine by Richardson, a direct influence of the Urotropin ingested upon intestinal fermentation itself was not thought of. Loebisch himself had his attention called to it quite accidentally. He was examining the urine of a man who was well nourished and upon a mixed diet, and who was taking Urotropin to the extent of 0.5 to 1 gram daily for a posterior urethritis, and found that neither by Jaffé's or Obermayer's test could he get any reaction for indican. Now the presence of this substance in the urine is one of the most accessible and reliable indications of the occurrence of bacterial intestinal decomposition, and he was thus led to investigate the action of the drug upon these ordinary enteric changes. As the tables presented by Loebisch clearly show, the indican in the urine examined decreased *pari passu* with the amount of Urotropin that was daily administered, until finally it disappeared altogether. The conclusion was inevitable that Urotropin, administered in daily doses of 2 grams

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to a healthy individual upon a mixed diet, inhibits ordinary bacterial intestinal putrefaction. Urotropin (Schering & Glatz, New York) has been reduced to the following prices (including packing, postage and insurance): In 1-oz. vials, at 75c per ounce; tablets, 7½ grains each, boxes of 20, at 35c per box; 5 grains each, boxes of 30, at 35c per box.

Painful Monthly Periods.—Many doctors prescribe a combination of Dioviburnia and Neurosine (equal parts) to abate the pain and nervousness of dysmenorrhea. Dioviburnia acting as a reconstructor to the parts affected, Neurosine allaying the pain, resuscitating and toning the nervous system. Physicians can prescribe Dioviburnia and Neurosine with impunity, as these products contain no opium, morphine, chloral or other deleterious drugs.

Result of "Absent Treatment."—A young woman, who is a so-called Christian Scientist, had observed with a growing pity a cripple who passed her house daily. His efforts to walk were so evidently painful that she determined to try the "absent treatment" on him. After the first few days of her self-imposed task she thought she noticed signs of improvement, and one day he appeared without his crutch and walked with hardly a limp. She was so overjoyed that she rushed to the street, seized the man's hand, and said: "My dear friend, you must excuse me, but I can not refrain from rejoicing with you over your cure. I have used faithfully the 'absent treatment' for your infirmity, and I can not tell you how happy I am to see by your walk that you have recovered." When the man rallied from the bewildering effect of this sudden outburst of "present treatment," he replied: "Thank ye kindly, ma'am, for your interest in me. I don't suppose it has hurt me any. But I may as well say I have just got from A. A. Marks a new wooden leg with rubber foot, and it works splendid, ma'am. The other old wood-footing always did make me limp."—*The American Homeopathist.*

Anemia, Iron and Oil.—The abundance of fat found in healthy bone marrow and the scarcity of fat in the bone marrow of anemic patients suggests a reason why Cod Liver Oil is so often efficient as a remedy for anemia. Iron certainly acts as a tonic and is an important constituent of hemaglobin, but it can scarcely contribute anything towards the organic substance of the red corpuscle. How the bone marrow changes fat into red corpuscles is one of nature's mysteries, but the microscope shows the marrow cells in all stages of transition into new corpuscles and abundantly surrounded by fat cells. Cod Liver Oil seems to be a natural food for bone marrow. Scott's Emulsion, a reliable preparation of Cod Liver Oil, is often of great use in

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relieving anemic conditions, especially the chlorosis of young women. That anemic blood should regain its color without the administration of iron, only reminds us of the fact that ordinary food contains all the iron the system needs, and probably the only form of iron the system ever really absorbs.

A New Antiseptic Emulsion.—It is our custom to mention through these columns from time to time new preparations that are offered the profession by reliable manufacturers if they are known to possess real merit. A preparation that is just now attracting much favorable comment of the profession is the new antiseptic emulsion, Firolyptol with Eucalyptol and Kreosote, prepared by The Tilden Company, manufacturing pharmacists, New Lebanon, N.Y.

Asthma, a Specific.—L. J. Prather, M.D., Marshall, Mo., says: "I am much pleased with Neurosine. It is a specific for asthma It certainly relieves and cures every time." January 28, 1902.

An Up-Builder in Post-Grippal Cases.—Very many of our readers know, by reputation, at least, Dr. A. H. Ohmann-Dumesnil, one of the foremost physicians of St. Louis From a letter of recent date we are permitted to quote the following, which we do with pleasure; "I needed a roborant, and took, with much benefit to myself, Hagee's Cordial of Cod Liver Oil Compound. Since then I have had occasion to use it in a number of cases of grip, and in all of them the results were of the best. The action of this preparation is rapid and thorough; and in a remarkably short time a case is recovered. It is certainly the remedy par excellence for this now prevalent affection. In a number of post-grippal cases in which enteric neuralgia, bronchial involvement, and a number of nervous symptoms manifested themselves, I have found this preparation equally effective. It is an excellent up-builder, and rapidly restores to its former condition the weight which has been diminished by the waste of tissues consequent to grip." This is certainly very high praise, and from an eminent authority.—*Massachusetts Medical Journal.*

A Lesson from the Masters.—The study of the practice and teachings of the really great men in medicine is a fruitful source of knowledge and practical guidance in the management of disease. Two principles are clearly recognizable; first, that nature possesses the ability to successfully combat the acute infectious diseases without the necessity of resort to powerful drugs for the relief of symptoms; second, that treatment is most successful which is most simple and which has for its object the reinforcement of nature's methods of antagonizing the encroachment of the disease processes. The appli-

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cation of these principles constitutes the most successful methods of treating influenza, pneumonia, bronchitis, and the numerous winter diseases associated with inflammation of the respiratory organs. One method of treating these conditions is by administering powerful and, in truth, a depressing drug for practically every symptom, *e.g.*, opium in some form, to control cough, a cardiac and metabolic depressant to reduce fever, stomach disturbing remedies as expectorants, etc. This plan of treatment is, authorities assert, antiquated, irrational and ineffective. On the contrary, it is a matter of absolute fact, proved by experience, that if a patient with pneumonia, influenza, severe bronchitis, is properly nursed, given adequate easily assimilated nourishment and be given Grays's Glyc. Tonic Comp. (The Purdue Frederick Co., 15 Murray street, N. Y.), in dessert to tablespoonful doses every three or four hours, that patient will withstand the attack much better and be surprisingly free from the pronounced depression which accompanies and succeeds these diseases. This plan of treatment has also the great advantage that the patient is spared the baneful effects of excessive drugging. Gray's Tonic not only fortifies the patient's strength, aids digestion and assimilation, but has an unquestionable influence in palliating the symptoms of respiratory inflammation.

Severe Case of Dysmenorrhea.—L. S. Stoll, M. D., writes: "I am pleased to inform you of the very satisfactory results I obtained from the use of Dioviburnia in a very severe case of Dysmenorrhea; a young lady, aged 17 years, suffered greatly for two days before each period, and during the whole time. Very nervous, and frequently fainting. Treatment was commenced three days before the expected period. I prescribed a tablespoonful of Dioviburnia three times daily, and if the pains began, to take a dessertspoonful every three hours, or oftener, until relieved. She menstruated without any pain, and is the happiest woman on earth. She suffered for four years and had tried a half dozen doctors, with but temporary relief, from morphine or opiates. I shall continue the use of Dioviburnia in all cases, where indicated." Smithland, Iowa, Dec. 16, 1901.

A Diet of Ground Rock.—The report of the Connecticut Experiment Station, just issued, contains a somewhat startling arraignment of the alum baking powders with which the country is flooded. Of the fifteen brands analyzed, about every imaginable adulteration was discovered, varying from sulphuric acid (22 per cent) to ground rock. The latter form of adulteration, is characterized by the report as a "particularly reprehensible adulteration, because very likely to prove injurious to health," which may well be believed, considering that it was found in one sample to so large an extent as over 25 per cent. Of this baking powder the report says: "This preparation con-

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tains more than 25 per cent of a ground rock, insoluble in strong acids, and consisting chiefly of silicates of magnesia. Prof. S. L. Penfield, of Yale University, kindly examined this material, and found it to be a mixture of pulverized talc and tremolite, a species of hornblende, which is extensively mined in northern New York, perhaps elsewhere, and is much used as a filter in the paper manufacture. The tremolite appears under the microscope in sharp needle-like splinters, which makes it a dangerous admixture in food." Alum itself is objectionable enough, and it is, therefore, not surprising that a manufacturer so unscrupulous as to use it would not hesitate also to mix in pulverized rock. This only goes to show the danger of using any of the cheap grades of baking powder. They are put on the market by small concerns who have no reputation to lose and care nothing for the public health. The cream of tartar powders, on the other hand, though costing a little more, are made by large and responsible firms who have too much at stake, even were they so inclined, to father anything but a chemically pure article. The family physician may not find it practicable to overhaul the larders of all his patients, but the knowledge he possesses of the dangerous character of alum powders ought to be communicated, particularly in cases where digestive and similar troubles are indicated. There are two or three cream of tartar baking powders whose names have become "household words," and from them the housewife may safely make her selection.

Grippal Cough—Laryngitis—Bronchitis.—In these affections antikamnia is indicated for two reasons: First, because of its absolute power over pain; at once removing this element of distress and placing the whole system in the best possible condition for a speedy recovery. And second, because of its power to control inflammatory processes, lowering the fever by its peculiar action on the nervous system. Codeine is strongly indicated because of its power as a nervous quietant, often quickly and completely controlling the cough. In nervous coughs, irritation of the throat, laryngitis, bronchitis and phthisis, where the cough is altogether out of proportion to the amount of expectoration, Antikamnia-Codeine tablets will give prompt satisfaction. In fact, in cases of nervous coughs, irritable throat, so commonly attendant upon influenza and la grippe, as well as in subacute laryngitis, and slight bronchitis, this tablet alone will often so control the cough that the disease rapidly subsides. This is not strange when we remember that nothing could keep up this irritation more than constant coughing. In the more severe cases of bronchitis and in phthisis, the patient is not only made more comfortable, but the disease itself is brought more directly under control by checking the excessive coughing, relieving the pain and bringing the temperature down to the normal standard.

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Dyspepsia.—In cases where there is dyspepsia, we can make but little headway until we give the patient a remedy which will assist digestion. Peptenzyme is a remedy very appropriate, because it aids in the digestion of all kinds of food. Pepsin is only good when the albuminoids are to be digested, and the diastatic ferments are given when the starchy foods are not digested well. The fact is, we can not supply our patient with a great many different remedies, so it is always best to give the patient a remedy in as compact a form as we can. I give the patient with dyspepsia of different types, Peptenzyme in doses of ten or fifteen grains, after each food taking. I use the term "food taking," because it is important in many cases to use the medicine after eating, whether the meal or lunch has been taken at the regular time or not. In the case of infants and children, I give the Elix. Peptenzyme, as it is pleasant and more easily given to infants than a powder or tablet. To adults I usually give the tablet or powder. I must add also, that dyspepsia and mal-assimilation are two factors which are bridges which must be crossed before we can get good results. To cure dyspepsia, some one remedy is best provided. That one remedy acts on all kinds of food. A one sided digestive ferment will not produce the results we desire, and so a reliable one remedy must be found. As before said, Peptenzyme has been found easy both for infants and adults. The remedy can be given with great freedom as regards dosage, and it is entirely non-toxic.—*Medical Progress.*

A Doctor's Dernier Resort.—W. H. Farrar, M.D., Surgeon St. L., I. M. & S. R.R., writes: "In an obstinate case of hiccough, lasting eight days under the skillful treatment of several excellent physicians, as a dernier resort I prescribed your Neurosine with the happiest effects. Two doses gave prompt and permanent relief. The patient was at certain intervals subject to the most violent attacks of hiccough, this last one seriously threatening his life. Neurosine, to all appearances, saved his life and effectually prevented any subsequent attack. I regard the cure as permanent."

De Soto, Mo., January 20, 1902.

Small-Pox.—"About twenty years ago, if my memory serves me, I was on a professional visit to Cincinnati, being in practice at that time in Ohio. While there and talking with my valued friend, Professor W. W. Dawson, he mentioned the wonderful antiseptic properties of Platt's Chlorides, and I have used it ever since. In our present small-pox epidemic I am using it every day. Nothing I have ever known equals it as a general antiseptic and deodorizer."

W. W. O'BRIEN, M.D., Surgeon Southern Railwaw, C. & O. Railway, and W. A. & Mt. V. Railway. Alexandria, Va.

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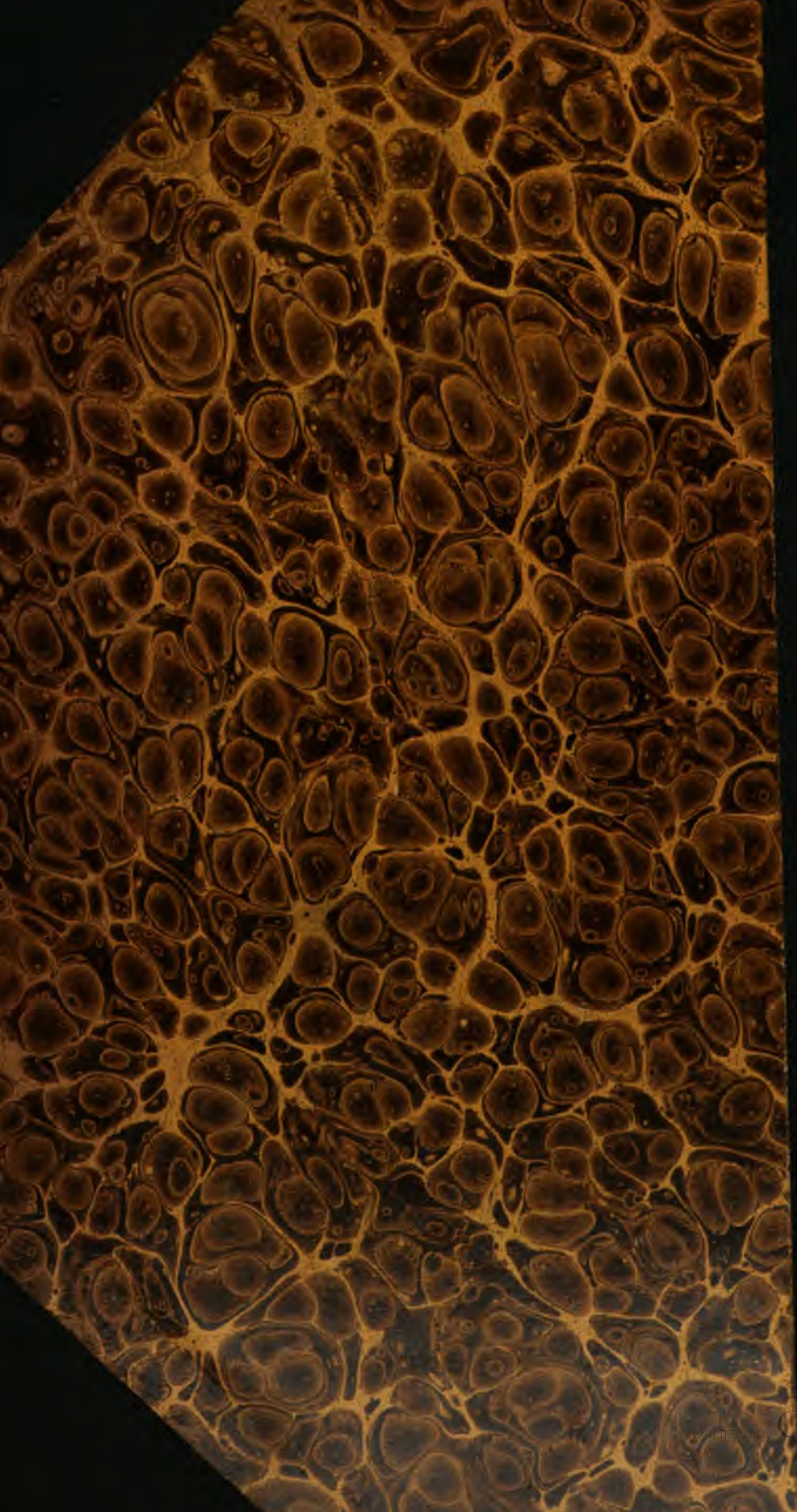
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